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KOPPERS

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COKE AND GAS OVENS

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Tar Distilling Plants
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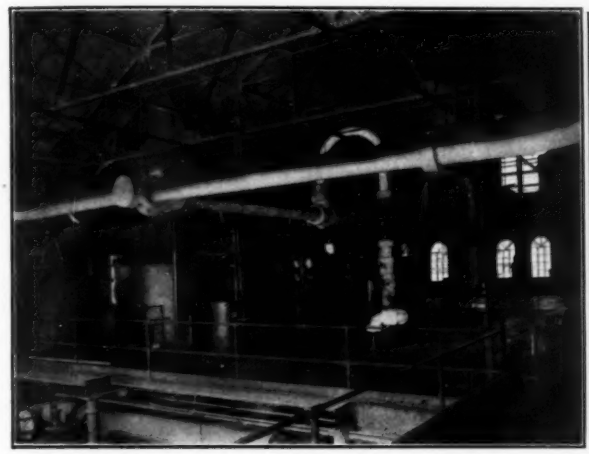

FIG. 1. OPERATING FLOOR AT PROVIDENCE, R. I., PLANT

FIG. 2. GROUND FLOOR OF GENERATOR HOUSE

New Carburetted Water Gas Installation at Providence, R. I., Has Daily Capacity of 11,250,000 Cu. Ft.

Consists of Three 10.5-Ft. Diameter Sets—Air Supplies Automatically Regulated, Gas Maker's Personal Judgment Being Completely Eliminated

Many interesting features stand out in the new carburetted water gas installation which has been put in operation at the Sassafras Point station at Providence, R. I.

This consists of three sets of the United States Gas Improvement Company's latest and most improved type, each set being 10.5 ft. in diameter, and having a safe daily capacity of three million seven hundred and fifty thousand cu. ft., with high efficiencies in labor and materials.

The staunch construction and generous proportions of the various parts of the sets stand out strikingly as does the ease with which they are operated and controlled.

The old-time all-day grind of "valve jerking" and the ceaseless walk back and forth from one part of the apparatus to another is absent in the operation of these sets, the gas maker, stationed comfortably before a hydraulic controlling mechanism and gauge board, with but little effort causes every valve to automatically operate exactly on the proper instant.

Regulation of Generator and Carburetter Air

The generators are equipped with massive fire doors that, when opened, expose the whole internal area of the shell, so that quick and effective cleaning is obtained. Also the carburetters and superheaters have large hinged manholes, so that the work of relining and re-checkering is made less arduous. The gas connections are all of ample area to enable the large amount of gas made per minute to pass quickly and easily from the apparatus.

Attention is attracted to the novel and effective improvement over old methods, due to the regulation of the generator and carburetter air. With these sets the air supplies are automatically regulated to the right

amount for proper combustion during the blow, and eliminate the gas maker's personal judgment in the matter.

Both the air and steam for the sets are predetermined and accurately measured by means of the U. G. I. Air and Steam Controls.

The steam supply to the generator is automatically admitted to the bottom or top as the case may be, for the up and down runs.

Elaborate or complicated parts are absent in the automatic lifting and lowering sprayer, which delivers the oil in the carburetter in a fine mist during the run. This rises out of the path of the blast gases during the blow, so that the danger of burnt-off nozzles is avoided.

Back Pressure on Set Reduced by Washer-Tar Batter

Another feature of the apparatus that will be noted is the "Washer-Tar Batter," an improvement which displaces both the washer and the old type wooden tray scrubber. In appearance this shell greatly resembles the well known wash-box, but internally it differs in that it is so built as to reduce the back pressure on the set by about two-thirds, while at the same time by a peculiar arrangement of baffles it removes by impingement the tarry and other foreign matter from the gas, much more effectively than does the old type of scrubber.

Though a separate steam turbine blower and blast main is provided for each set, yet the whole system is so arranged that any blower can deliver to any set, and any blower or blast main not in service, can be completely isolated from the system.

It would seem an impossibility to ever have a damaging blast pipe explosion with the arrangement at Providence, for every precaution seems to have been taken. The blast mains are all equipped with explosion heads at their ends, a safety blast damper is installed in the blast pipe to each set, and each blast valve has its own individual venting device.

The building which houses the installation commands attention at the outset. In accord with the other buildings of the works, it is fire proof throughout, and of modern construction, with plenty of light and ventilation. It was constructed by the Bartlett-Hayward Company of Baltimore, the general contractor for the complete plant.

A New Kind of Gas Furnace

A furnace operating on a new low pressure system is described in the London *Daily Telegraph*, which shows many advantages, and which may be successfully applied to many different kinds of work. In these furnaces means have been adopted to heat the whole of the air supply necessary for combustion, which takes place in the furnace chamber, in such a manner as to render it unnecessary to employ the usual Bunsen burners with a secondary air supply. Combustion of the mixture of gas and air is so near perfection that no excess of air is required, and, therefore, no heat is dissipated by the carrying-off of the excess air at a high temperature, as is the case with furnaces less well regulated as regards the admission of air. The combination of the entire preheating of air with the complete theoretical proportions of gas and hot air results in very economical working, the only heat losses being those necessarily incurred by slight radiation from the outside of the furnace and from the flues.

The working of the furnace may be briefly described as follows: Town gas at the normal pressure enters the furnace chamber through a series of tubes from the gas main supply. Air at approximately 2-in. water gage—the same pressure as the gas, or thereabouts—enters the fire-brick lining of the furnace through a series of tubes from the air main supplies, and travels down the side and along the bottom of the furnace through fire-clay tubes. The air, thus efficiently preheated, meets the incoming gas as described above, at which point combustion takes place. The products of combustion then pass along the under side of the furnace before entering the flue or flues, the air for supporting combustion above described being preheated by the waste products. The local heating effect of the blast flame and usual combustion chamber are thus obviated.

A reducing atmosphere may be maintained under the most economical conditions by simply diminishing the pressure at the air main. Air is usually supplied by a fan so that the expensive blowers, with their costs for power to drive them, can be dispensed with. By the use of valves or cocks upon the main gas and air supply pipes, the furnace may be regulated for temperatures to a very fine degree. It is usual to fix pressure gauges on the outlet side of the cocks or valves; so that, having first arrived at the correct respective pressures of gas and air to give the results desired in the furnaces, the subsequent regulation is simple—it being only necessary to close or open the valves to give proportionate pressure of gas and air. For example, the pressures of gas and air to give a certain temperature are respectively .1 and 0.8 inch. To reduce the consumption to one-half, the valves are reduced to 2.5 in. for gas and 0.2 in. for air, when the exact mixture as before the reduction is maintained.

Each flue is efficiently controlled by double dampers, and it cannot be too much emphasized that, in order to obtain the best results in this or any other furnaces, the flue regulaton must be looked to when altering the rate of combustion. When the above-mentioned details have been attended to a perfectly even temperature throughout can be depended upon, and the conditions of heating can be either neutral, reducing, or oxidizing.

A point worthy of note is the complete absence of noise usually prevalent with gas and air blast furnaces, which is a matter at times worth consideration where a number of furnaces are working together in one shop. The absence of cutting heats, which destroy brickwork and tiles, is another advantage, and means that the furnace lining will last much longer.—*American Gas Institute Abstract.*

Essential that Salesman Should Know the Apparatus He Is Selling

It is essential that the salesman should know the apparatus he is selling, in the opinion of G. H. Tweddell as expressed in a paper presented at the meeting of the North-East Coast Institution of Engineers and Shipbuilders held at Newcastle-upon-Tyne, Oct. 26, 1916. If he knows the purchaser's conditions and the capacity and performance of his own plant, he will feel satisfied as to whether or not his apparatus will accomplish the work required. The selling engineer of the future should know all there is to know of the design and be trusted to take care of himself.

Lack of Piping Throughout in Newly Erected Houses Not Only Hampers Securing of Gas Lighting Business, But the Introduction of Other Appliances as Well

H. H. Newman Advocates Company Maintenance—Outlines Results Obtained by His Company in Free Maintenance Plan—Cost Not Excessive and Results Such as to Justify It

Are we getting the gas lighting we should, and if not what is the reason? asked H. H. Newman, of the Public Service Gas Company of New Jersey, in his paper on the Maintenance of Residence Lighting, presented at the meeting of the New York Section of the Illuminating Engineering Society held in the auditorium of the Consolidated Gas Company of New York, March 8. This is a phase of our business which is discussed by men connected with the gas industry at the present time, a great deal more than it was a few years ago, and I believe as a rule it is generally agreed we are not getting as much gas lighting as we should. The reason why, however, is not so universally agreed upon.

I believe any unprejudiced illuminating engineer will agree that gas lighting is as good as any artificial illuminating to be secured. There must be then some reason why we are not increasing the amount of gas lighting instead of just holding our own, or in many cases, losing ground.

Necessity of Skilled Maintenance

We cannot deny the fact that there is a feeling in many quarters against gas lighting; this is shown very strongly by the great number of houses which are being erected without gas piping or piping in part only. This lack of piping not only prevents our securing gas lighting, but also prevents the introduction of gas appliances, such as portable heaters, chafing dishes, etc.

I believe the use of mantle gas lamps has brought with it the necessity of having someone from the gas company to take care of the lamps after installation. The user of the lamp does not and will not give it the attention which it needs. Instead of condemning the lack of attention to the lamp they condemn the lamp or the quality of gas furnished.

It is as nonsensical to suppose a gas lamp will continue to give as much illumination without the proper care as it is to suppose your automobile or furnace will give good service without attention. If the users of gas lamps will not take care of them, we must do it for them if we expect them to continue to use them.

What the best method to care for lamps is we do not all agree. Several plans have been tried with varying success; among them being the consumer request plan, wherein calls are made and lamps are taken care of on request. The contract plan wherein calls are made and lamps cleaned, regulated and worn out parts renewed for a stipulated sum per month. The so-called free maintenance plan wherein calls are made at regular intervals, lamps and glassware cleaned and adjusted without charge, and repair parts, if any are needed, sold at the regular retail price. The last named plan, I believe, is the one which will give better satisfaction to our customers and do more to secure gas lighting than either of the others. In order to accomplish what we desire, however, it, or some equally good plan must be adopted by the gas companies generally. Very little gain in the use of gas for lighting will be made by companies here and there giving some form of maintenance, while the majority of companies continue to do nothing.

It is a noteworthy fact, as recognizing the importance of the subject, that practically all gas associations and gas periodicals of the country for some time past have been engaged in discussing the subject of maintenance of incandescent gas lights.

I believe that it is an accepted view that maintenance in one form or another will have to be furnished to gas lights if our illuminating business is to live and grow. No gas company will deny this if it has any regard for its welfare or any sense of perspective.

Consumers of gas will not look after their lights—even the ordinary ones—and if the light is obtained through, and by the use of, a gas mantle the problem is deeper and even more involved, principally due to lack of knowledge on the part of the public of this form of lighting.

The gas company's precept is "good service"—an actual obligation, not an implied one—and there can be no backward step in this regard.

As a concomitant, however, to any general system of maintenance and the extra expense of same, consideration must be given to existing gas rates and to the possibility of inclusion therein of such added extra expense not now contemplated or included in said rates, and this is especially so if thermal standards are adopted.—*W. Greeley Hoyt.*

Care Needed in Selecting Maintenance Force

We must show our customers that their lamps are going to be taken care of and that with proper care, gas lighting will be perfectly satisfactory. Great care must be taken in properly training men to do this class of work. We must be careful to teach our men that the primary object is to maintain lamps, and that selling is next in importance.

I am perfectly aware this is a view not shared by some gas men, but my contention is the maintenance plan is a plan of service, and if our maintenance men are allowed to put selling ahead of maintenance, the plan will suffer. For this reason I am strongly opposed to a system whereby a bonus or commission is given maintenance men on their sales. Understand, I am not opposed to the men selling whatever repair parts and lamps they can, but this is not to be made of prime importance by added remuneration for increased sales.

In the Passaic District of the Public Service Gas Company, we have been giving the free maintenance plan for nearly two years, and the results have been surprisingly good. We have five men who are devoting their entire time to this work and are paid a straight salary. These men are experts in the care of lamps and

are instructed that the primary object is to give service to our consumers. Selling is a secondary consideration.

We clean and regulate lamps free, charging the counter price for repair parts necessary or for new lamps, putting them up without cost. These men telephone to the office at three o'clock every afternoon and all complaints received to that time are attended to the same afternoon. Complaints received after three o'clock, unless there is some special reason for doing it the same day, are attended to the next day.

We are making three regular inspections per year, this I feel being often enough to keep the average residence lamp in good burning condition. Great care, as before stated, must be taken that the maintenance men do not become so enthusiastic over the selling end as to make it paramount to the maintenance end, thus making it a selling proposition instead of one in which we are endeavoring to so take care of our customers' lighting appliance as to give the best possible results.

I have separated the calls, inspections and lamps taken care of during the seventeen months we have had the plan in operation into two periods, one of ten months and one of seven months. The results obtained are as follows:

		Per man per day.	Per cent. to total calls.
Calls made 10 months	27,209	22.2	....
Calls made 7 months	18,730	22.3	....
No service rendered 10 months	14,404	11.7	52.5
No service rendered 7 months	3,467	6.5	29.1
Net inspection made 10 months	12,805	10.4	47.5
Net inspection made 7 months	13,263	15.7	70.9
		Per man per day.	Per inspection made.
Burners inspected 10 months	18,340	15.0	1.4
Burners inspected 7 months	19,313	23.0	1.4
Lamps cleaned and adjusted 10 months	9,110	7.4	0.071
Lamps cleaned and adjusted 7 months	8,239	9.8	0.062

Of 37,653 burners inspected, 17,349, or 46 per cent. needed cleaning or adjusting, which would seem to be all the proof necessary to show that some form of caring for our consumers' lamps was necessary.

Results Well Worth Cost of Attaining Them

It is also interesting to note that while during the first ten months operation, 50 per cent of burners inspected needed attention, the last month which this report covers, only 39 per cent. needed attention.

The labor charges to maintenance of consumers' equipment amounting to $2,119.95 is for time spent in cleaning and adjusting existing lamps, or in other words, lamps which we find in the premises. This work was formerly done by us and is usually done by most gas companies through their operating department at the consumers' request, and it would seem in arriving at the net cost to be only fair that this should be deducted from the cost of the maintenance plan.

Under ideal conditions, that is, where the consumer made a complaint on each lamp that was out of adjustment, it certainly would have cost us more than this amount to take care of the complaints. It will be seen from the above figures that not excluding labor charge to maintenance of consumers' equipment it cost for the period covered by the seventeen months, $2,010.59, or at the rate of 12 cents per lamp cleaned and adjusted.

I feel that the service rendered to our customers is well worth the amount which it has cost us. While

Material Sold	
Mantles	6,876
Burners only	194
Chimneys	1,739
Globes	1,235
Lamps complete	3,216
Miscellaneous	2,056

for the first ten months service the net inspections were 47.5 per cent. of the calls made, during June the inspections were 38 per cent. of the calls made, July 32 per cent. and in October this had increased to 50 per cent. of the calls made, and in February to 67 per cent. of the calls made. The last seven months the percentage was 70.9 per cent. having increased to 82 per cent. in August and 84 per cent. in September, thus showing that as our customers are becoming better acquainted with the plan, we are gaining access to more houses for the purpose of inspecting the lamps therein.

The houses where no service was given are houses where no one was at home, those using electric current exclusively for lighting, those who were not using mantle lamps and the ones who would not let us in for the purpose of inspecting their lamps. The system which we are working under is as follows:

Working Plan Outlined

Our inspectors are supplied with a carrying case and the tools necessary for cleaning, regulating and putting up lamps. In the carrying cases are placed lamps, mantles of various kinds, chimneys, cylinders, globes, by-passes, pilot lights, tubing, ground joints, in fact all the various parts used on the lamps which we handle. Each carrying case when loaded weighs about twenty-two pounds. We charge against each man his equipment which is known as his standard stock.

Each morning the maintenance men turn into the storeroom keeper, a list showing the goods sold the previous day; this list being accompanied by the dupli-

Cost		Per call	Per Insp.	Per Burner Insp.	Per lamp cleaned and adjusted
Labor, material and sundry expenses	$9,137.64	0.19	0.31	0.24	0.53
Receipts from sundry sales	7,127.05	0.15	0.27	0.18	0.41
Net cost	$2,010.59	0.04	0.04	0.06	0.12
Excluding labor charge to maintenance cons. equipment	2.119.95				
Profit	$109.36	0.002	0.004	0.002	0.006

cate order for goods sold and signed by the purchaser. Immediately on receipt of this list by the storeroom keeper, he checks the orders against it and if found correct, gives the maintenance man the goods called for so that when he leaves the office each morning he always has a full complement of lamps and repair parts.

The forms used when a sale is made are two kinds; cash sale orders and charge orders. The cash sale order being in triplicate so that receipt can be given to the purchaser when money is paid and the charge order in duplicate. The originals of both charge and cash sale orders are turned in by the maintenance man at the order counter and the regular sundry sales bookkeeper's order is made from it. While the method of handling the orders is one which would have to be made to fit the systems of each office, the one as outlined above has worked out very well with us. I feel one of the reasons why more companies do not take up a maintenance plan is fear of cost, but as shown, the cost is not excessive. Under the showing made by Passaic district, Public Service has extended its maintenance territory until now they have over one hundred thousand customers under maintenance.

Let us bear in mind that the most important thing in our business is that we are selling SERVICE and all of our efforts should be directed towards making this service the most efficient in every way that it is possible to give.

Roasting of Cocoa Beans a Field for Gas

Process of Manufacture Described—Assyrian Candy Furnace an Out-of-the-Ordinary Gas Appliance

By GILBERT C. SHADWELL

Although chocolate mixing machines have been mentioned and the subject of chocolate syrups, etc., have been referred to in previous articles in this journal, chocolate making has not been so far touched on.

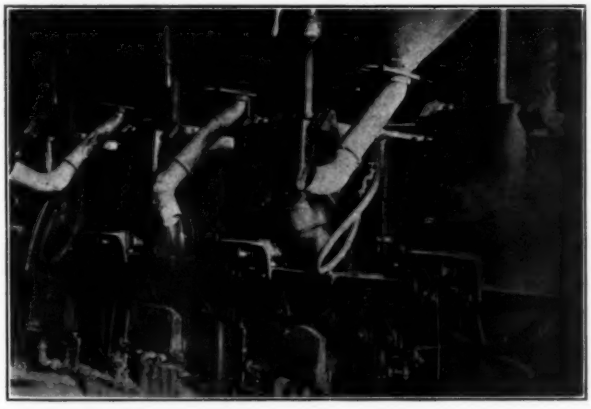

FIG. 1. ROASTER FOR COCOA BEANS

Heat is often used in some of the processes involved and it therefore seems desirable to outline somewhat briefly the method of manufacture of this widely used commodity so that when any case has to be dealt with the gas man may go about the work understandingly.

Chocolate is actually only a paste of the ground kernels of the cocoa bean mixed with sugar, vanilla or other flavoring and then made into a cake. The treatment of the cocoa bean varies considerably in different places, but usually it has to be fermented, dried, shelled, roasted and then pressed.

The drying is of interest to gas men and may be carried out by means of an air heater and blower system as described by the author in a paper read before the American Society of Heating and Ventilating Engineers recently (part of this paper was reproduced in the AMERICAN GAS ENGINEERING JOURNAL, Jan. 27).

ROASTING OF BEANS IN GAS-FIRED FURNACE

The roasting of beans is carried out in roasters such as were described in a previous article in small quantities or in roasters such as are shown in Figs. 1, and 2 in large amounts. The operation is similar to that of roasting coffee and may be briefly described as follows:

Inside the circular front cover is a cylindrical drum beneath which are located the burners.

In filling the drums the front lid is lifted up and the beans are poured in from the shoot. The drums (which

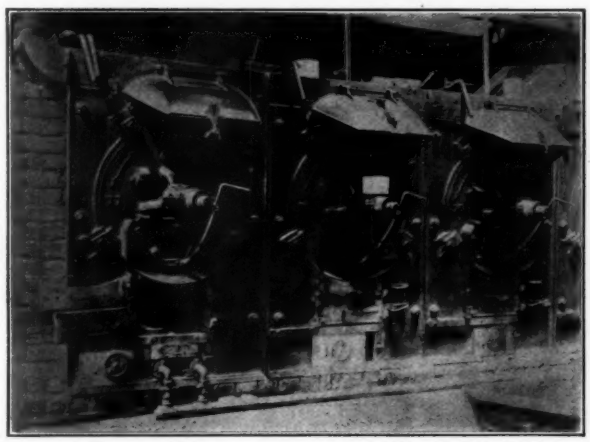

FIG. 2. GAS BURNERS ARE UNDER CYLINDRICAL DRUM

are fitted with vanes) rotate at a low speed of about 30 or 40 r.p.m. being driven from the rear end.

When roasted, the front is opened and the beans are forced out by the vanes as the drum rotates. They are then poured into cooling pans and stored.

The following description of the manufacture is taken from the encyclopaedia Britannica. "The beans are cleaned and sorted to remove foreign bodies of all kinds and also graded into sizes to secure uniformity in roasting. The latter process is carried out in iron drums in which the beans are heated to a temperature of about 260 to 280 deg. Fahr., and results in developing the aroma, partially converting the starch into dextrine and eliminating bitter constitutents. The beans also dry and their shells become crisp.

EXTRACTING FAT

"In the next process the beans are gently crushed and winnowed, whereby the light shells are removed and after removal by sifting of the 'germs' the beans are left in the form of irregular cocoa-nibs occasionally seen in shops. Cocoa nibs may be infused with water and drunk, but for most people the beverage is too rich, containing the whole of the cocoa-fat or cacao-butter. This fat is extracted from the carefully ground nibs by employing great hydraulic pressure in heated presses. The fat exudes and solidifies. When fresh it is yellowish-white but becomes quite white on keep-

FIG. 3. ASSYRIAN CANDY FURNACE OR GRIDDLE

ing. It is very valuable for pharmaceutical purposes and is a constituent of many pomades.

"After the extraction of the fat the resulting mass is ground to a fine powder when it is ready for use in the ordinary way. Many preparations on the market are of course not pure cocoa but contain admixtures of various starchy and other bodies.

"In the preparation of chocolate the preliminary process of cleaning, sorting, roasting and removing the shells and grinding the nibs are followed as for cocoa. The fat, however, is not extracted, but sugar and sometimes other materials are added to the ground pasty mass, together with suitable flavoring materials, as for example vanilla. The final result is a semi-liquid mass which is moulded into the familiar tablets or other forms in which chocolate comes on the market."

Novel Type of Candy Furnace

Although many of the operations carried out in the candy makers' and confectioners' trades have been mentioned it will be appreciated that it is next to impossible to cover all of them. New problems arise daily and the gas man must use his ingenuity in conjunction with the appliance manufacturer's experience in giving a customer what is best suited to his needs.

An example of an appliance which is out of the ordinary is shown in Fig. 3. This is an Assyrian candy furnace or griddle. Above the burners and resting on the circular jacket is located a heavy copper lid which is heated and on which the work is carried out. The procedure consists in pouring what may best be described as batter into a metal container like a vase which has four holes of about ¼ in. in diameter in the bottom. The operator's fingers close these holes while the container is being filled and when ready he opens them and allows the "batter" to pour itself over the hot plate by passing the vase over the plate, thus forming various twists and turns. When all of it has been poured out and cooked it is folded over into a lump which constitutes the finished product.

Nothing Short of Serious Industrial Panic Will Bring Coal Price Back to Level of Three Years Ago

Prior to the European war the price of coal was fairly uniform, from year to year and season to season, owing to the comparatively quiet business conditions and a favorable labor situation. There was, of course, a natural upward tendency in price, due to the steadily increasing cost of labor and other factors of general progress, but these increases were readily absorbed by the steady improvement in power house efficiency. But with the starting up of munitions plants, the suddenly increased demands of the shipbuilding industry, increased freight transportation and the springing up of hundreds of new manufacturing enterprises there was brought about a condition in the coal industry which is without parallel and which is likely to continue for an indefinite period. With the demand for coal doubling every four years, under fairly normal conditions, it does not seem likely that the price will return to the basis of two or three years ago, even though the war should prove of short duration. In fact, it is not probable that anything short of a serious industrial panic will ever again bring coal back to its former price level.

Up to the middle of last year public utility companies were able to purchase coal at the mines at from 70 to 90 cents per ton. They are now paying an average price, on yearly contracts, of $1.55 per ton at the mines and at the present moment no contract for future delivery can be made for less than $2.50 per ton. Those companies which are buying in the open market—and many of them must get part of their supply thus, owing to delay in delivery on contract coal—are paying from $4.25 to $5 per ton at the mine.—*W. S. Barstow.*

Gas Service Essential to Full Value of Property in a Community

The scale of living in American communities advances constantly and once a standard of lighting and power service is established in a city or town its maintenance becomes a necessity, declares William P. Bonbright & Company, specialists in electrical utility investments, of New York City, in a recent booklet. Once gas or electricity becomes general in a residence section the service is essential to the full value of property there and the payment of the company's bills is practically as certain as the payment of taxes.

Need of Well-Trained Engineers as Salesmen, Appreciated by Manufacturers

The need for well-trained engineers for the commercial and selling side is becoming more and more appreciated by manufacturers, declared G. H. Tweddell in a paper presented at a meeting of the North-East Coast Institution of Engineers and Shipbuilders, held at Newcastle-upon-Tyne, October 26, 1916. Sound technical knowledge and a considerable amount of practical training are nowadays almost indispensable for a successful selling engineer.

Indications Are That Larger Part of Dyestuffs Business Will Remain in Hands of Domestic Manufacturers Even After the War

I. F. Stone Traces Development of Aniline Color Manufacturing Industry in This Country—One Hundred and Twenty American Factories Now Making Intermediates and Anilines

The first American aniline factories were established about 1875. By about 1880 there were some ten factories engaged in the manufacture of these products, and it looked as though it would be a very successful industry, as tariff conditions at that time were favorable to such enterprise.

In 1883, however, a new tariff law was passed, reducing the protection on colors to such an extent that the industry was no longer possible, and consequently most of the factories dropped out until at one time there were only three engaged in this manufacture, and these three were carried on more or less by the ambition of their owners that some day conditions would be changed, rather than at a profit. One of these factories, in particular, lost a large amount of money up to the time it finally attained success in about 1900.

About 1898 another factory was established, and then along about 1914 still another was established, so that in 1914, at the beginning of the European war, there were five factories actively engaged in this industry. Owing to the intense competition of the European manufacturers, especially the Germans, none of these factories were successful in making a complete line of colors, and were restricted to but a few of those which could be made to advantage in this country; therefore, the industry was not a large one and was not running to any considerable extent.

Situation in 1914

One reason why the industry could not operate successfully was the lack of what we call intermediate products, that is, products made from benzol and naphthalene (coal tar derivatives) which are the bases of the manufacturing of practically all aniline colors, as none of these intermediate products were manufactured in this country up to 1914, when the war commenced, with one exception which I will mention later. The American manufacturers were therefore obliged to rely entirely upon European factories for their raw materials; in other words, the intermediate products, and naturally the European manufacturers charged them such a price that they could not successfully compete with the finished colors of Europe, which were made from the same intermediate products, but which were secured by the European manufacturers naturally at a lower price than they could be secured by the American manufacturers who imported them.

The single exception to this statement is that in 1910 a factory for the manufacture of one of the intermediates, viz.: aniline oil, was established, but had not been at all successful up to the time of the war, owing to European competition, the European manufacturers, by the way, having reduced their price immediately upon the establishment of this American factory.

The situation was then, in 1914, when the war began, that no intermediate raw materials were manufactured here with the exception of this comparatively small amount of aniline oil, and then the supplies of these intermediate products from European factories, that is, German factories, were immediately cut off, just as were the supplies of the finished aniline colors, and the American manufacturers therefore were not able to relieve the situation except to the extent of using up what raw materials they had on hand, which, of course, were not nearly enough to be of any perceptible help to the consumers of aniline dyes. The situation therefore a few months after the war started, say, about Jan. 1, 1915, had become very acute, as practically all the stocks of imported colors which were here at the beginning of the war, had been consumed, as had also the raw materials employed by the American factories in their manufacture of colors, the one exception being a factory which had previously been securing its aniline oil from the American manufacturer, and therefore they were enabled to continue this manufacture of colors without any particular interruption, except the interruption of the lack of foreign intermediates, of which, however, they fortunately had a large stock. These statements were made by I. F. Stone, president of the National Aniline & Chemical Company, and vice-president of the Schoellkopf Aniline & Chemical Works, in introduction of his paper on "The Development of the Aniline Color Manufacturing Industry," from which the following has been abstracted, which was presented at the meeting of the Syracuse Section of the American Chemical Society, held in that city, Jan. 12.

I am not mentioning the names of any of these factories, in this article, as I wish to be absolutely impersonal, but there is no question but that the position of this factory just mentioned, with its supply of raw materials, was a great relief to the consumers of dyes in this country, and it was very fortunate for them that a factory had been established for the manufacture of aniline oil and that as American manufacturers of colors they had taken the precaution to secure their supply from this American factory, even though they were obliged to pay a higher price than they could have imported the oil for at the time. They preferred, however, to do this in order to encourage the American manufacturers of these intermediate products.

Intermediates Now Being Manufactured in Large Variety

Very soon after the war it became apparent that there would be a great necessity for the manufacture of these intermediate products in this country, and as the basic material, that is coal tar, is, of course, a large domestic product, it was then only necessary to recover its derivatives, such as benzol and naphthalene. Benzol being needed particularly for explosives and other war purposes, was the first product which had the attention of the American producers. The production was increased gradually until it has reached the present time something like 30,000,000 gal. annually as against about 3,000,000 gal. prior to the war, and the production of naphthalene has also increased largely owing to its demand for use as a raw material in the manufacture of

these intermediates, although not to such an extent as benzol.

The manufacture of intermediates gradually increased to such an extent that there are now being manufactured a large variety, so that American manufacturers of colors are now able to get a fair supply of these intermediates, and are therefore enabled to make a more complete line of colors than was possible at the beginning of the war.

Increasing Variety of Colors

As I have previously mentioned, the first large intermediate to be manufactured, however, was aniline oil, the factory which originally manufactured it before the war, immediately increasing its production, and many other concerns starting in later on, until it came to a point where the production was fully if not more than equal to the demand, and the fact is, that factories making this product, are in such a strong position that it is doubtful whether it will ever again be imported from Europe to advantage.

Another intermediate, the manufacture of which was commenced largely, was chlor-benzole, which is used in the manufacture of sulphur black, a very important color for cotton goods, and for which there is a large sale.

The manufacture of this color, by the way, is now so large that it is fully equal to the consumption, and is another product which will probably never be imported again to advantage.

Other intermediates followed, until as I have said, at present we are able to obtain a sufficient variety to manufacture a line of colors which will probably take care of the necessary shades, which includes blacks, blues, browns, reds, yellows, greens, orange, violet; the seven primary colors, from mixtures of which practically every shade can be obtained for all materials, such as wool, cotton and silk.

It has been stated that American manufacturers were not on a firm basis, in that they had followed the lines of least resistance in making colors; that is, making colors which were easiest to manufacture, and that when the war was over and competition came again from Europe they would not be able to stand against the competition. This opinion is not true, in that while it is true that they did follow the lines of least resistance, it so happened that the colors manufactured were the ones most largely consumed; for instance blacks; this being by far practically half of the entire color consumption of the country.

Consumers could get the necessary quantities for consumption next year if they were careful to contract for same in time to allow the American manufacturers to arrange their facilities and buy the raw material necessary to take care of such contracts for 1917.

Blue Next Receives Attention.

The next color in importance, which had their attention, was blue, this being next to black in the proportion of consumption. They are now producing blues for the same textiles, viz. wool, cotton and silk, to a very satisfactory extent.

To show the development of this business, when we consider that there were only five factories making aniline dyes in the country prior to when the war began, I will say that we now have a list of about 120 making intermediates and anilines, and as I have stated above, their whole production will take care of the entire country as far as the necessary colors are concerned.

Special colors which are not made here are being imported from Switzerland and occasionally on the Submarine "Deutschland," so that consumers are able to get quite a varied line and there is therefore now no real shortage of these products.

Practically the only colors which are not now made in this country of any consequence are indigo and anthracene derivatives, known as vat colors, for the dyeing of ginghams, shirtings, etc. (although at this time there is one factory being erected for the manufacture of indigo), but it is possible to secure natural products like indigo, logwood, fustic, cutch, flavine, etc., which can be substituted until the artificial colors are either manufactured or again imported.

Alizarine colors, for which there is as far as I know no plan to manufacture, are easily replaced by the so-called chrome colors, which are practically as fast and available for men's wear, sweaters, heavy woolen, etc., in black, blue, brown, green, yellow and red, therefore the shortage of these alizarines is really not so serious, and then, there are some colors for lakes called the para colors which are not made here, but the lake manufacturers can easily get what they want by making their own lakes from paranitraniline and beta naphthol, which are made here.

A few other colors not made here are such specialties as Rhodamine, Auramine, Patent Blue, etc., but some are being brought over from Switzerland and England, and from Germany so that they are obtainable, and can be used in connection with American colors for blending shades and making mixtures.

Five Original Factories Turning Out Most Staple Product.

In speaking of the increase to some 120 factories, I must emphasize the fact that the first five already established before the war, are the ones who have made the most progress, and are the ones turning out the most staple and satisfactory colors as to quality, etc., and they are the ones who will contine to hold the most of the business after the war, as due to their experience, capital, etc., they are in a better position to do so than the newer manufacturers who have largely depended on inexperienced chemists and on outside capital to take up the manufacture.

This is emphasized by the fact that none of the older factories are advertising their stock for sale in the newspapers, nor are they soliciting subscriptions for bonds or in any other way asking for capital, as all of them seem to be in position to capitalize themselves. This being true, they certainly are in a strong position to meet competition after the war, with the advantage they have gained in the meantime through their development and increased production, which will reduce overhead expenses of their factories, as it is obvious that it will not cost as much per pound to manufacture say one million pounds as it would to manufacture one hundred thousand pounds—the increase in the manufacture of colors being at least ten times more than it was before the war.

Manufacture of Intermediates.

The principal point to continue the successful manufacture is the question of the manufacture of the intermediates, on which they depend as their raw materials, and it is the intermediate manufacturers who will need the most help to maintain their position. If they cannot do so through protection granted them by Congress in the last tariff bill, then they should be supported in

some other way, by the Government for instance, as I have stated in an address made last year, the Government could establish factories for the manufacture of these intermediates, which would be very desirable because these same factories could be used for the manufacture of ammunition in case of war, as it is a fact that the raw materials for the manufacture of aniline products are much the same as those used for explosives, so that in making such a move the Government would be protecting itself in case of war, for its supply of explosives, as well as strengthening the position of the aniline color manufacturers by giving them intermediates at necessary prices.

This could be easily done by the Government as it is a fact, as I have stated, that the production of the original raw material, coal tar derivatives, viz. benzol and naphthalene, are now in sufficient supply for the production of all necessary intermediates.

Quality of Coal Tar Products.

There is some criticism as to the quality of the coal tar products made in the United States since the war, but to this I can say that they are identically the same in every respect, as the European products, as they are made from the same chemical formulae, and there is no reason therefore why they should not be fully as good in every way if they are properly manufactured, which they are by the competent factories.

The trouble is that people in comparing colors do not compare the same colors but take some color, which is especially adapted for certain purposes, and compare it with colors which may be used for the purpose but are not so well adapted, due usually to the ignorance of the people who use colors, but they could get the necessary information as to what colors to use if they would confer with some more experienced manufacturers of colors who would know just for which purpose colors are adapted and what colors could be replaced, in comparison with the European colors.

High Prices Justified.

In regard to the high prices charged by American manufacturers of colors, many consumers are under the impression that these are caused by scarcity, owing to the inability of European manufacturers to deliver their products here, but while this may be true to some extent, the real reason is that owing to the fact, as I have said, that the raw materials for the manufacture of aniline colors, are much the same as those used for explosives, the war demands for explosives are so great that it creates a scarcity in the raw materials, and consequently prices are high, and color manufacturers are obliged to pay abnormal prices for their raw material, so that the prices for the manufactured colors are correspondingly high. Not only that but the cost of labor in the past two years has advanced to such an extent that it is almost double what it was in the normal times.

However, the price of American colors in any event, is not as high in proportion, as the European colors, as those colors which are imported are sold for many times more their normal value in this country, than are the American colors. For instance, a color known as Patent Blue, on which the normal price is about $1.00, is being sold as high as $13.00 per lb. for a type which is only half strength, so in reality the full strength type would be selling at $26.00, or about twenty-six times its normal price, while I know of no American color which is sold at more than about ten times its normal price, and most of the staples are sold at about only five times. The point is that the prices in Europe are evidently quite as high or higher than they are in the United States, therefore, the United States consumer is under no disadvantage as compared to consumers in other parts of the world.

As to when products will be back to their normal prices, this will come in due course, after the war, and when things get more normal; that is, when materials and labor once more resume normal conditions, although as far as labor is concerned, it is very difficult to say whether this will again in this country go back to what it was before the war, our laboring people having been educated now to a higher schedule of living, and it is doubtful if conditions will change much in this respect, as it would be difficult to return to a different or former standard.

I believe, however, that American consumers will be only too glad to pay labor everything it is worth, and consequently a higher price for colors than ruled before the war will be cheerfully paid by our consumers, if they are within reason, which they will be.

Favorable Outlook.

To sum up what is now being manufactured, would say that practically a full line of basic, acid, chrome and sulphur colors are being made, and people in criticizing the development of the color manufacture, should not forget that it would be impossible for us to do in two years since the war what it has taken German over fifty years to accomplish; in other words, make a complete line of colors for every purpose, but in making the staple colors such as we have been able to do and getting them to a point where we can supply the whole consumption of the country, I think we have accomplished wonders in the short period since the war, or a little over two years.

The definite answer in connection with the manufacture of dyestuffs in America is therefore, as I have already stated, that the present conditions of the dyestuff supply are very satisfactory, and the future outlook is still more satisfactory in that we will make more colors, and everything indicates that the larger part of the business will remain in the hands of American manufacturers even after the war, instead of the hands of the European manufacturers who, in former years, have had a practical monopoly of this business.

Skip Hoist to Remove Ashes from Battery of Six Gas Producers

Rochester Company to Install Novel Handling System—System Will be Electrically Controlled

A novel adaptation of the skip hoist to the removal of ashes from a battery of six gas producers is to be installed at the plant of the Rochester Railway & Light Company at Rochester, N. Y.

The producers are approximately 14 ft. in diameter and are spaced longitudinally about at 18 ft. centers. There is a longitudinal trench or tunnel running in front of the producers in which a skip car runs. Ashes are discharged from the producers into this skip car by means of a chute and gates. Gates can be operated either from the producer floor or from the tunnel.

The skip car runs horizontally through this tunnel for approximately 120 ft., then 100 ft. up an inclined track having an inclination of 30 deg. from the hori-

zontal, finally dumping into a 1,000 cu. ft. circular steel bunker.

The most novel feature of the outfit is the method of control of the skip car. The requirements were, as follows:

1. Car being at any one of six different stations, it must be possible to send it either forward or backward to any other station selected and automatically stop at that station.

2. Car being at any station, it must be possible to send it to the bunker, dump, reverse, return and stop automatically at any predetermined station.

The electrical control equipment at each station consists of a group of three push buttons, UP, DOWN and STOP, and a signal switch interlocked with the control circuits which gives a red light when car is to stop or a white light when car is to pass. The operation is, as follows: Assuming the car is at station 13 and is partially filled with ashes. It is desired to get more ashes at station 14. The signal light at 3 shows red and at all others white. The signal switch at 3 is thrown to the running position which changes this light to white and the switch at 4 is thrown to the stop position, which changes this light to red. Then pushing DOWN button, car will leave 13 and go to and stop at 14.

If it is then desired to send the car to dump into the bunker, the UP button is pushed, car goes up, dumps, returns and stops again automatically at station 14 unless the signal switches are changed meanwhile to have it stop at some other station.

The stop button can be used to stop the car at any time or at any point desired in case of emergency or for any other reason.

The equipment, complete with cylindrical bunker, will be designed and built by R. H. Beaumont Company of Philadelphia.

Use of Gas Saves Labor on Roofing Job

Saving Amounts to from 1½ to 2 Cents per Square Foot —Pitch Melted on Roof in Gas-Heated Pot

W. O. Lamson, Jr., manager of the Chester County Gas Company, of West Chester, Pa., describes a unique use of gas in a recent issue of *New Business*.

A paper company had constructed a large addition to its plant. The roof was to be covered with a tar felt material laid with pitch. It was 100 ft. from the ground, and it was thought all the pitch used would have to be heated on the ground and hoisted to the roof, while hot, to be applied. This has always been the common practice, and a fire of wood or coal has been used to heat the pot. This operation requires a man to attend the fire, and two men to attend to the hoisting of the hot material.

The engineer in charge of the work conceived the idea of locating this tar pot on the roof and moving the vessel with the work, so that the hot pitch could be applied with minimum loss of time and saving in labor of handling.

The gas company was approached, as to the possibility of gas for this work, and the result was the following installation: A sheet iron frame 50 in. long and 30 in. wide was constructed, to hold a pot, very similar to a large glue pot. The sides and ends of the frame were covered to retain the heat, and openings were made to admit air, for proper combustion. Two double ring burners were installed under the pot, and the gas connection was made with a 2-in. steam hose to permit of the transportation of the pot. The gas meter was located directly under the roof, out of the way.

The roof contained 7,372 sq. ft., and the gas consumption, from the time the first batch of cold pitch was melted until the work was finished, was 7,000 cu. ft. It required 5,100 lb. of pitch for the work, and it is estimated that had it been necessary to heat the pitch on the ground it would have required 6,500 lb., due to the waste by the old method.

The total cost of labor was 0.7 cents per sq. ft., and this was with unskilled men. Even with men of this type the saving in labor is estimated from 1½ to 2 cents per sq. ft.

The pot used contained about 350 lb. of cold pitch, and this was melted in about 35 minutes each day. The cold pitch was added from time to time during the day, without any interruption to the supply ready for application. The paper company is so well satisfied with the installation that they are about to cover another roof, containing about 30,000 sq. ft., in the same manner. It is also estimated the cost per square foot will be still further reduced, owing to the greater experience of the men.

Ordinary Two-Bottle Method of Sampling Producer Gas Never Gives an Exactly Correct Sample

Philip W. Swain Describes an Original Device for Measurement and Control of Rate of Sampling —Discusses Analysis

When continuous samples of producer gas extending over long periods are taken, using the ordinary two-bottle method, a number of errors occur aside from that due to the absorption and evolution of carbon dioxide by the water, declared Philip W. Swain in a paper presented at the annual meeting of the American Society of Mechanical Engineers, held in New York City, Dec. 7, 1916. It is evident that a correctly drawn sample should have the same composition as that which would be obtained by collecting in a gas holder and thoroughly mixing all of the gas which passes through the main in the given period. To get this result, when the flow of gas in the main is variable, the sample must be drawn continuously at a rate proportional to the rate of flow of the gas in the main.

A similar error occurs if the gas is sampled at a uniform rate while there is a large variation in the composition of the gas and its rate of flow through the main. If the changes in gas composition and the deviations from proportional sampling are not extreme, the error is not serious, and in cases where both the rate of gas flow and the rate of sampling vary at random, the errors may add up or partly neutralize each other. The ordinary two-bottle method never gives an exactly correct sample, and that clogging of the thin tapering opening in the rubber tube between the bottles may produce a large error without being detected.

Device for Easy Measurement and Control of Rate of Sampling

The writer has designed a device for the easy measurement and control of the rate of sampling. The connections of the upper bottle are the same as in the ordinary two-bottle method, but the water passes into the top of the lower bottle through an orifice flow meter. A thin copper disk, having a suitable small orifice, is

clamped between the two halves of a union, so that the head of water which is producing the flow through this orifice can be measured on a manometer. The water in the manometer can easily be brought to any desired point by adjusting the pinch cock on the rubber tube connecting the bottles. The orifice, being made in a very thin plate, gives little trouble from clogging if clean water is used.

For sampling at a uniform rate, the water in the manometer tube can be brought to any mark and kept there by an occasional adjustment of the pinch cock. If it is desired to take a continuous proportional sample, it is necessary to have some form of flow meter in the gas main and a scale of rate of flow on the manometer. Since it is only necessary that the rate of flow of the water be proportional to the rate of flow of the gas in the main, it is immaterial what units of flow are used. Four scales of flow are used by the writer. These were laid out according to the law that the flow is proportional to the square root of the head.

Gas Analysis

In general, the engineer who is testing or operating gas producers desires to use a portable analysis apparatus which is rapid, reliable and easy to operate, and which will give each gas constituent correctly within 0.2 or 0.3 per cent. of the total volume of gas.

For the complete analysis of producer gas, the ordinary Orsat apparatus is not sufficient; provision must be made for the determination of hydrogen, methane and illuminants (chiefly ethylene) in addition to the carbon dioxide, oxygen and carbon monoxide. There are now on the market for this purpose a number of portable instruments similar to the Orsat but with certain modifications and additions.

In the Williams apparatus bubbling pipettes are used for all of the liquid reagents, which are as follows: Caustic soda solution for carbon dioxide; bromine water for illuminants; phosphorus sticks for oxygen, and an acid cuprous-chloride solution (containing copper strips) for carbon monoxide.

In the ordinary method of operation, the carbon dioxide, illuminants, oxygen and carbon monoxide are absorbed in this order, and the hydrogen and methane are then determined by explosion with air in the explosion burette. It is necessary to use a slight excess of air and to measure the contraction on explosion and the carbon dioxide produced by the explosion. The latter is determined by absorption in the first pipette. If the full amount of gas left after the absorption of carbon monoxide is used for the explosion, the following equations are employed:

Methane = carbon dioxide produced.

Hydrogen = 2/3 contraction — 4/3 carbon dioxide produced.

Possibility of Determining Carbon Monoxide, Hydrogen and Methane by One Explosion.

The method just described is the usual one for the analysis of producer gas with a portable apparatus, but it has certain disadvantages as follows: On account of the large amount of carbon monoxide in producer gas, the cuprous-chloride solution must be changed often; as the amount of methane present is small, the hydrogen content of the gas may be so low that the gas will not explode with air. In the latter case it becomes impossible to determine the hydrogen and methane by the ordinary method.

It is possible to eliminate the absorption of the carbon monoxide and to determine the carbon monoxide, hydrogen and methane by one explosion.

This method does away with the troublesome cuprous-chloride solution and insures an explosion if the gas is combustible. It requires, however, the determination of the oxygen consumed as well as the contraction and the carbon dioxide produced. The absorption of the oxygen left over from the explosion is quicker than the absorption of carbon monoxide.

Determining Quantity of Oxygen Consumed

In the determination of carbon monoxide, hydrogen and methane by one explosion, it is necessary to measure the contraction due to the explosion, the carbon dioxide produced by the explosion and the oxygen consumed in the explosion.

The first two are determined as in the ordinary method where only the hydrogen and the methane are exploded.

To determine the quantity of oxygen consumed, it is necessary to measure the amount of air taken in, and the excess of oxygen by means of the phosphorous pipette. For 100 cu. cm. of ordinary producer gas it is sufficient to use 124 cu. cm. of air (26.0 cu. cm. oxygen).

With this amount of air the explosive mixture would have a total volume of more than 200 cu. cm. and could not be contained in the burette, so that it is necessary to reduce the volume of gas before explosion.

For simplicity of calculation it is well to throw away exactly one-half of the volume of gas remaining after the absorption of the carbon dioxide, illuminants and oxygen, and then to take in 62 cu. cm. of air containing 13.0 cu. cm. of oxygen. If one-half of the gas is used for explosion, the following equations give the per cent of hydrogen, carbon monoxide and methane in the original gas:

Hydrogen = 2 (contraction — oxygen consumed).

Carbon monoxide = 2 (1/3 contraction + 4/3 carbon dioxide produced — oxygen consumed).

Methane = 2 (oxygen consumed — 1/3 contraction — 1/3 carbon dioxide produced).

Producer gas is often free from illuminants so that time may be saved by passing directly to the phosphorus pipette after the carbon dioxide has been determined. If any fumes appear, the absorption of oxygen can be continued. If fumes do not appear, the gas is passed into the pipette containing bromide water, and then into the carbon dioxide pipette to absorb the bromide fumes. The action is rapid, so that one pass through each pipette is sufficient.

Gas and Electric Earnings Gained 7 Per Cent. when Industrial Gross Earnings Showed 50 Per Cent. Shrinkage

The stability of gas and electric earnings in times of depression was best illustrated following the 1907 panic, state William P. Bonbright & Company, specialists in electrical utility investments, of New York City, in a recent booklet.

During the year when industrial gross earnings showed a 50 per cent. shrinkage and railroad receipts decreased 10 per cent. gas and electric earnings actually gained about 7 per cent. The increase is usually less at times of business depression than during periods of prosperity, but the average gas and electric company gains steadily through both.

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The Builders of the Gas Industry

This journal believes in a reward for increased efficiency, in adequate and even liberal compensation to employees, but it does not consider it a matter of wisdom to bear too much on the material side of the industry; to say in effect, for example, to the alert young man, "Here, come into the gas industry, you'll make more money in a shorter space of time in it than you can in any other branch of the engineering profession."

The men who have built up the gas industry, have made it possible for it to make the liberal provisions it has during the past few months, were actuated by different motives than this.

They contributed what they have mainly because they loved their work; because they were—to use a commercial term—sold on gas and their hearts were in their tasks. If they were well paid, if they were able to give all their thoughts to gas without the necessity of perplexing over how to eke out their own personal existence, then we can be assured that the industry has received from these men all they had to give it. It did not merely share in the talents they had to give.

Ample compensation is merely, in a way, an insurance that the employer will receive a greater portion of what the employee has to give. It is not the actuating motive that stirs the builder type to activity.

The Catalogue Salesman in the Industrial Field

The consensus of opinion apparently is that we need a special type of salesman in the industrial fuel field. It is equally apparent that we are all more or less agreed that the best man we can obtain for the purpose is the engineer-salesman.

But to what extent are we applying these beliefs in our present-day practice? Are we making strong efforts to enlist such a force, or have we simply remained passive under the delusion that it is impossible to find an engineer who is also a salesman? If we have we may as well reconcile ourselves to the fact that industrial business will never become a great part of the gas business unless we stir ourselves to overcome this phantom obstacle. Until we do so it will always be to the gas industry what the proverbial bag of gold at the foot of the rainbow is to the small boy.

The catalogue salesman has no place in the industrial fuel gas business. One reason is that the general run of prospects are intelligent men who are thoroughly conversant with their own business.

They are entirely capable of reading and digesting the contents of the catalogues we send them. They do not require an interpreter.

The man we send them must be able to discuss intelligently with them the various angles of their own business, and after making a study of their plants, tell them

how gas may be advantageously applied, and why—still in the terms of their own business.

To send a man who can merely repeat parrot-like the claims the prospect is already familiar with, and not capable of going beyond this point is an imposition on the prospect's time, a waste of the gas company's money and an assurance that gas-burning equipment will not be again considered in the plant in question for many months to come.

Installation and Maintenance of Gas Lighting Equipment

The consensus of opinion in the gas industry leans towards the installation and maintenance of gas lighting equipment—burners, mantles, glassware, etc.—in some manner which will make it easy for the consumer to secure it and will insure that it gives approximately its maximum service. This is reflected in the large number of papers and the trend of discussion on such subjects at recent gatherings of associations and technical societies.

The sentiment is established. Prompt effort must be made, however, to put it into effect. While we mark time many houses and buildings are being erected in which no provision is being made for gas distribution throughout. We are losing valuable opportunities.

To Whom, in the Future, Must We Look for Our Artificial Light?

It is interesting to note that just as there are gas men who declare that our lighting business must inevitably slip away from us, so are there electrical men in sufficient numbers to make their opinion manifest who see nothing in the future for electric lighting.

Their complaint is that, with each improvement in efficiency, electric lighting becomes less desirable as a central station load.

The pessimistic gas man sees our only future in the fuel field. The electrical man of the type under discussion sees his industry's salvation in a large increase in motor service.

Fortunately the arguments of these men in either industry are not likely to do anything more than arouse considerable fruitless discussion, taking up time at association gatherings that might be, with profit to all concerned, better devoted to matters of more real value to the respective industries.

The future promise of the gas industry, as this journal sees it, lies, not only in holding its lighting business, but developing it to the highest possible degree, and, at the same time, in likewise developing its industrial and domestic heating and cooking load to a point that lies so far in the future as to be beyond the vision of any of us. The electrical industry likewise has need of every class of business it now has on its lines and as many other classes as it can, with economy, handle.

The Gas Man in Illuminating Engineering

Coincident with the almost general spirit of aggressiveness that is becoming manifest in the gas field in regard to the lighting end one is particularly struck with the increasing number of gas papers which are being presented before the various sections of the Illuminating Engineering Society.

Those who attended the annual convention of the American Gas Institute will remember the strong appeal of William J. Serrill, president of the Illuminating Engineering Society, to gas men to take a more active part in its affairs. Doubtless the increased evidence of the gas man in the affairs of this society where unquestionably he belongs to as great an extent at least as the electric man, but in the discussions of which he in general seemed to have a very small part, may be traced to a great extent to the efforts of Mr. Serrill.

But, at the same time, the co-operation and assistance the section chairmen are giving him must not be overlooked. Particularly is this so in the case of W. Greeley Hoyt, chairman of the New York Section.

Though in willingness to give the benefit of his knowledge and experience to individual inquirers—even to strangers—the gas man stands almost as a class apart, he has not been characterized especially by his efforts towards a general dissemination of his knowledge. There are doubtless many reasons that may be advanced in explanation of this characteristic. The gas man himself says "too busy." Some say an excess of mistaken modesty. Some critics have asserted "he's asleep."

But Mr. Hoyt has apparently turned a deaf ear to all these arguments. Within recent months there have been held in New York City two meetings which might be termed essentially gas meetings, and the attendance at them partook very much of the atmosphere of a gas association convention.

A vice-president of a very large gas company—possibly one of the busiest men in the industry—was enlisted as a speaker at one meeting. On the same occasion a man who has possibly done more to perfect the incandescent gas mantle than any other man living was also scheduled to appear. Illness prevented him from taking part on the program, but in his place another appeared who was qualified to speak with authority on the subject under discussion.

On the other occasion—we state this on the authority of one long in the business of manufacturing lighting fixtures and who has attended innumerable such gatherings—for the first time in the history of conventions a designer of lighting fixtures took the platform and submitted for discussion the designer's side. On the same occasion a vice-president of another gas company read an extensive discussion of one of the papers, a vice-president of another large company took part in the discussions and a representative of a great gas company presented a constructive paper on a very vital subject in the gas lighting field. Incidently at this meeting the

developer of the incandescent mantle, who was prevented by sickness from attending the first meeting, took part in the discussion.

The attitude of Mr. Hoyt in these matters is one, which, in the opinion of this journal, could be adopted with advantage to the gas industry by all associations and technical societies and all gas journals.

Without question the gas man's plea of "too busy" has ample justification in fact, but it should not be too considerately respected. He owes a great deal to his company. That is beyond question. But he owes something also to the industry as a whole.

Men who have attained—through actual accomplishment—the places some of these men have attained have become in a way the property of the industry. Their careers have been tied up in gas and all their efforts have been given to the advancement of the gas industry.

We are all subject to the effects of age. If these men should pass out of active participation in the affairs of the gas industry without transmitting to others the lessons they have drawn from their wide experience and the knowledge they have derived from years of earnest study and research, three-fourths of their usefulness to the industry would be lost.

Good Management an Intangible Asset

Previously we have called attention several times in these columns to what might be termed the altruistic reasons for gas company managements to encourage their subordinates to write for the technical press. There are material reasons too that can be readily proved.

Good management is generally regarded as an intangible value to any public utility. Financial writers counsel their clients to take this element into account in purchasing stocks and bonds in such companies.

It is quite conceivable that there are companies in this country whose managements, except in the matter of publicity, have attained a degree of efficiency in management much beyond those whose accomplishments we have learned to accept as standard, yet whose securities, if judged on this basis, would be a drug on the general market.

Good management to have its maximum bearing as an intangible value must have publicity. The best way the management of any gas company can gain this publicity is to have its accomplishments recorded frequently in the technical press of the field.

We have in mind two companies whose managements and organizations have acquired reputations for efficiency far out of proportion to their size. The reason is that both of them maintain house organs and both encourage their employees to write on useful subjects.

Many of the articles published in these organs are reprinted in the various gas journals. They contain valuable information; too valuable to be limited to so restricted a circulation. Others allude to an installation that to the eyes of the editorial staff of one of the latter journals seems to have possibilities in it. A note is written for full information and the inquiry receives prompt attention. If this bears out the original surmise, an invitation goes out to write an article. Such invitations are seldom declined by employees of the companies cited.

The results are as has been stated. The management of these companies have not acquired their reputations for efficiency merely in the gas journal offices. They have acquired them throughout the gas industry, and from there they have spread out to the investing public.

All Work and No Play

"All work and no play makes Jack a dull boy," is an expression that slips quite glibly off our tongues. But how many of us practice the doctrine? How many of us can look back over the last month and point to even as many as ten times when there was a distinct break in interest between two consecutive days of work; ten occasions upon which we forget for three or four waking hours that there was any such a thing as gas and that we were in any way connected with the gas industry?

If there are such it is certain that in proportion to their ability their work during the month was considerably more efficient than was that of the large number of us who cannot do so.

The ideal arrangement would be so many hours of intensive work pertaining to gas, so many hours of complete diversion from gas and an ample number of hours devoted to sleep.

This may seem a wasteful arrangement. We are so steeped with the "midnight oil" idea and the "sweat of the brow" route to success that it is hard to overcome our prejudices.

But times are changing. When our successful men of the past were "burning the midnight oil," and sleeping four hours out of twenty-four, they were competing with others who were handicapping themselves in a similar manner. Their main asset was principally a greater physical endurance than their competitors.

Had there been a man with the more modern idea in the field, who was not an idler, but who followed the arrangement cited as a matter of business, he might have been with less talent a bigger success than the apparently more diligent worker had he been accorded the opportunity of putting his theories into practice.

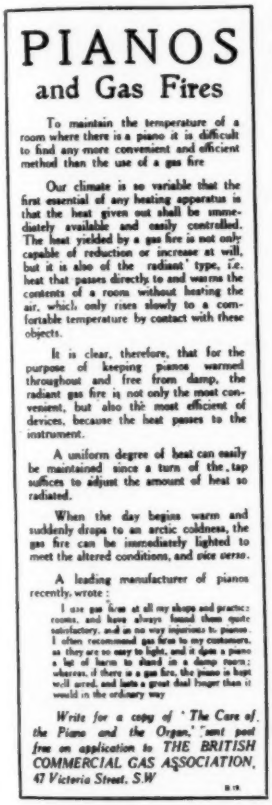
The hours of diversion need not necessarily be devoted to play. They may be devoted to an avocation, to reading of a nature apart from gas, to the cultivation of some artistic talent. So long as the interest to which they are devoted provides a distinct break between the two days of work, the same purpose will be served.

Eighty Per Cent. of British Manufacturers Contribute to Associated Publicity Fund

Effort Effective in Increasing Business in Territories Thought Developed to Saturation—Subscribers to Fund Share in Proportion to Their Production

Gas, on the face of it, does not look an easy thing to advertise. People might be supposed either to use gas or not use it, according to whether the gas was there or not. And they might have been supposed to burn about as much as they wanted and no more.

There was a man in London who thought otherwise, declares Thomas Russell in an article in *Printers' Ink*. He was an executive officer of the Gas Light & Coke Company, and his name is F. W. Goodenough, controller of gas sales, well known to many American gas men.


PIANOS
and Gas Fires

To maintain the temperature of a room where there is a piano it is difficult to find any more convenient and efficient method than the use of a gas fire

Our climate is so variable that the first essential of any heating apparatus is that the heat given out shall be immediately available and easily controlled. The heat yielded by a gas fire is not only capable of reduction or increase at will, but it is also of the radiant' type, *i.e.* heat that passes directly to and warms the contents of a room without heating the air, which only rises slowly to a comfortable temperature by contact with these objects.

It is clear, therefore, that for the purpose of keeping pianos warmed throughout and free from damp, the radiant gas fire is not only the most convenient, but also the most efficient of devices, because the heat passes to the instrument.

A uniform degree of heat can easily be maintained since a turn of the tap suffices to adjust the amount of heat so radiated.

When the day begins warm and suddenly drops to an arctic coldness, the gas fire can be immediately lighted to meet the altered conditions, and *vice versa*.

A leading manufacturer of pianos recently wrote:

I use gas fires at all my shops and practice rooms, and have always found them quite satisfactory, and in no way injurious to pianos. I often recommend gas fires to my customers, as they are so easy to light, and it does a piano a lot of harm to stand in a damp room; whereas, if there is a gas fire, the piano is kept well aired, and lasts a great deal longer than it would in the ordinary way.

Write for a copy of 'The Care of the Piano and the Organ,' sent post free on application to THE BRITISH COMMERCIAL GAS ASSOCIATION, *47 Victoria Street, S.W*

GAS PUBLICITY PREPARED BY ASSOCIATION

Mr. Goodenough knew that he was up against a difficult proposition when he was appointed to boost the company's sales of gas. His company operates over an area representing about 125 square miles of London and suburbs, but to this area its ground is limited by act of Parliament.

No Hope of Obtaining Additional Business by Extension of Territory

The limitation is what set him thinking. Since his company could not hope to sell more gas by going outside its territory, there was nothing for him to do except try to sell more gas in the old ground. If Mr. Goodenough wanted to sell more gas he must make more people in his district burn it and increase the consumption per house.

He did not regard the lighting demand for gas as by any means a hopeless proposition, in spite of keen electrical competition, and took steps to make the best of the case as it stood.

One of the things which he did, on the face of it, looked like helping people to do with less gas. An incandescent burner uses far less gas per hundred units of light than an open jet. The saving of gas far more than pays for broken mantles.

Yet the Gas Light & Coke Company did everything in its power to push the use of incandescent burners, believing that improved service would tend to increase instead of to diminish consumption, and it did.

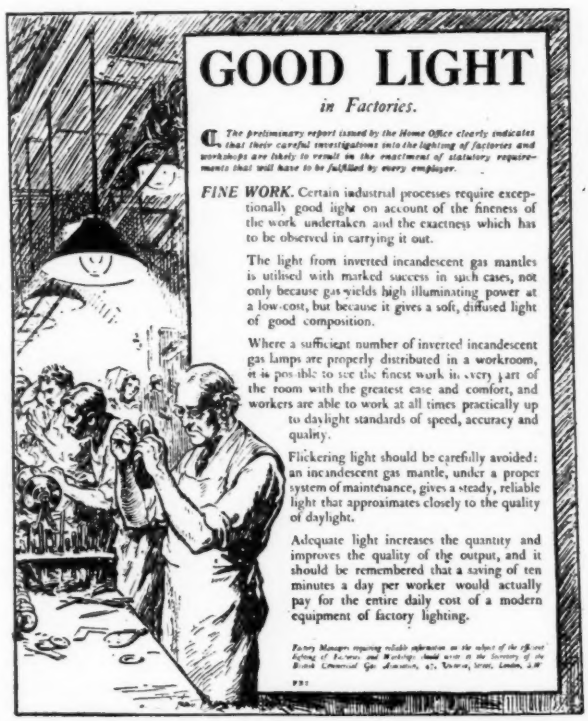
All experience points the same way. The more light people can have, the more they want. Since metallic-filament lamps have been used in electric lighting the consumption by current per house has gone up, though metal filaments use only a quarter as much electricity as carbon lamps, proportionately to the light given.

The broad-minded policy of giving consumers the maximum service for their money did good work in selling gas.

Industry Had Not Progressed in Advertising

Until the Gas Light & Coke Company broke fresh ground, about the only thing used to advertise gas was a plan of holding cookery lectures and demonstrations with gas-cookers, with occasional circulars and advertisements in local papers. Many gas companies had hired lecturers to do this, or had them provided by the gas-appliance makers, and they backed up the effort by renting gas stoves to consumers at very low rates. Gas fires for living-rooms and bedrooms, with geysers and similar contrivances (when the kitchen range gives place to the gas-cooker) were, and are, similarly rented.

The Gas Light & Coke Company, the largest gas-producing concern in the kingdom, wanted to go beyond the cookery lecture and occasional circular plan. But there was a difficulty in this. Newspaper advertising was what Mr. Goodenough wanted. And the moment he went into newspaper advertising he saw that he was spending his company's money to sell other people's gas. No London daily has a circulation limited to London, or anything like it. Even if he could have found a paper that circulated in London alone, there were other gas companies in London serving dis-


GOOD LIGHT
in Factories.

The preliminary report issued by the Home Office clearly indicates that their careful investigations into the lighting of factories and workshops are likely to result in the enactment of statutory requirements that will have to be fulfilled by every employer.

FINE WORK. Certain industrial processes require exceptionally good light on account of the fineness of the work undertaken and the exactness which has to be observed in carrying it out.

The light from inverted incandescent gas mantles is utilised with marked success in such cases, not only because gas yields high illuminating power at a low cost, but because it gives a soft, diffused light of good composition.

Where a sufficient number of inverted incandescent gas lamps are properly distributed in a workroom, it is possible to see the finest work in every part of the room with the greatest ease and comfort, and workers are able to work at all times practically up to daylight standards of speed, accuracy and quality.

Flickering light should be carefully avoided: an incandescent gas mantle, under a proper system of maintenance, gives a steady, reliable light that approximates closely to the quality of daylight.

Adequate light increases the quantity and improves the quality of the output, and it should be remembered that a saving of ten minutes a day per worker would actually pay for the entire daily cost of a modern equipment of factory lighting.

Factory Managers requiring reliable information on the subject of the efficient lighting of Factories and Workshops should write to the Secretary of the British Commercial Gas Association, 47, Victoria Street, London, S.W

SHOWING PLEASING TYPE AND BORDER ARRANGEMENT

tricts which a London paper must necessarily cover. In point of fact, there was no paper which the Gas Light & Coke Company could use as an advertising medium without paying for circulation far beyond its own area.

Interesting Other Companies

Posters might have been used, and, in fact, were used later, to supplement press advertising. But at the beginning of things, with an educational campaign to carry, a poster was not considered adequate. The only adequate thing about it would have been the fact that it could have been limited to the company's area.

However, the Gas Light & Coke Company was determined to start a press campaign, especially in the periodicals circulating among the women of the house, the architects and the doctors; so the makers of gas appliances—who necessarily would benefit by such a scheme—were approached, and on their co-operation being secured a beginning was made.

From the campaigns then started the provincial gas undertakings soon found they were benefiting, and the live men in the industry rapidly realized the possibilities of a national publicity campaign on a larger scale.

After considerable negotiation and discussion a powerful committee was found and all the gas-producing companies in the kingdom were invited to subscribe to a general gas-advertising fund. They needed a little coaxing, but the British Commercial Gas Association was formed, representing now about 80 per cent. of the gas production of the country. The other 20 per cent. gets the benefit of the advertising for nothing.

Subscribers to the association share its expenditure in the proportion of their production. None of them have any cause to regret it, and the gas consumption of this country increased steadily as a result of the work of the association until the outbreak of the war, and has stood the shock of that catastrophe in the most remarkable way. Much has been done during the war to make known the many ways in which gas could be used in the improvisation of factories, hospitals and other war-emergency establishments.

How Work is Carried On

The association is a spending body. It not only advertises in the press—both popular and specialized—but also prints and circulates illustrated pamphlets and show-cards for the use of its subscribers. The show-cards are used in the showrooms kept by most large gas companies to exhibit gas fires, cookers and water-heaters. The pamphlets are circulated by individual companies.

None of them advertises anything but gas and gas appliances. No names of the makers of appliances are mentioned, nor are gas companies necessarily mentioned.

They do not require to be. If a householder or manufacturer wants gas, he has to take it from the company or corporation which has the mains in his town. He cannot take it from anyone else.

Gas companies or corporations buy very large quantities of these pamphlets and show-cards from the association, which also exports them by the hundred thousand to every part of the world.

Public service companies are not the most progressive people in the world by nature. But the gas companies of the British Empire are all of them—or nearly all—enthusiastic believers in advertising now. Even those who don't contribute are believers, likely enough.

This gas publicity is handled by the London Press Exchange, of which Reginald Sykes is the managing director. At the beginning the work was all directed toward the use of gas for heating purposes and for cooking in summer. Most of the new ground broken was in the former direction. Nearly all housewives use a gas-cooker part of the time. But bath-heaters and gas fires are not nearly so general. So it was largely on these that the advertising centered.

Appealing to the Doctors

Prejudice against gas fires was countered by a direct appeal to the medical profession. As a result, the association was able to publish the following figures of doctors using gas fires in their own houses in the area of the Gas Light & Coke Company alone, who started this special campaign:

Season.	Possible Users.	Actual Users.
1908-9	3,620	1,054
1909-10	3,630	1,844
1910-11	3,814	2,205
1911-12	4,012	2,484
1912-13	4,183	2,811
1913-14	4,203	3,120
1914-15	4,281	3,350

In short, of all the doctors given in the medical directory for that area, while only 29 per cent. were using gas for heating in 1909, 78.2 per cent. were using it in 1915.

These statistics were published in the *Lancet*, the *British Medical Journal* and other medical papers in full-page form, with an argument based upon them. The use of technical and trade journals has been a feature of the advertising always, but daily papers and high-class weeklies, including *Punch*, have been consistently used in full-page, half-page and double-column spaces.

Advertising Since the War

War conditions looked like causing difficulties—and did not stop at looking.

But there were national as well as commercial reasons for getting over the difficulties and keeping in the game. The Ministry of Munitions allowed it to be known that a fall in gas production would make trouble for the fighting forces of the Empire and its allies. Tri-nitro-toluol and certain other ingredients in high explosives are by-products of gas. Years ago Germany used to import British coal-waste and turn it into explosives and dyes. So the gas people switched to the advertising of gas for shell-making and every other factory process stimulated by war conditions, including the improved lighting of factories, to meet pending legislation based on a Home Office (government) inquiry. The argument was that for factory illumination gas had the advantage of keeping the air in motion, thus giving better ventilation, and also, when burned with a mantle, of producing the best color-matching light known to science.

Many Economies of Gas Played Up

The association has also made clear in its publicity the important part to be played by gas in the thrift campaign resulting from war conditions, the great saving it effects in labor, alike in home and factory, and in the economical methods of cookery it makes possible. But for gas, the munitions made in Britain this past

two years would have needed far more hands to produce, thus reducing the number of men for the fighting-line; whilst housewives have been able to fill the gap caused by their servants going into factories and hospitals by using gas instead of coal in all directions. These points have been constantly hammered home in the British Commercial Gas Association's publicity.

Although in this and other advertising the opponent is often electricity, not a line of print attacking electricity has ever been published by the association. It would have been easy to show that electric cooking, for instance, is not economical, and that electric-heaters for rooms burn an awful lot of current. But the managers of this campaign were too modern and up to date to attack a competitor. The only form taken by their attack was just to go ahead and sell their goods. This was good, sound policy, and decent business, too.

And it has paid handsomely.

Rate and Ultimate Temperature of Heating and Methods of Cooling Important Operations in Steel Hardening

W. A. Ehlers Declares that One of Greatest Mistakes Made in Hardening Rooms is in Attempting to Harden Steel Pieces of Any Considerable Size in an Open Coal Forge

The process of hardening is similar to that of annealing except that instead of slow cooling the steel is quenched quickly, which causes it to become hardened. There are, therefore, two important operations in this process to be considered—the rate and ultimate temperature of heating and the method of cooling, according to W. A. Ehlers in the March *Bulletin* of the National Commercial Gas Association.

In the hardening operation the same precautions are to be observed as in annealing, *viz.*, heat slowly and uniformly; do not exceed (except slightly) the upper critical temperature of the steel being heated.

When the steel has thus been brought to the proper temperature the same transition has taken place as in annealing process, that is, the constituents have been changed into hard structure known as austentite.

Upon being suddenly plunged into water or oil while at this temperature, the rate of cooling is so sudden that there is little if any further change in the structure of the steel and it then takes the form of austentite, or if allowed to cool slightly it may change back to martensite or troostite.

Uneven Heating Produces Uneven Cooling

One of the greatest mistakes made in hardening rooms is in attempting to harden steel pieces of any considerable size such as dies in an open coal forge. It must be admitted without argument that such pieces cannot be evenly heated in such fires. Uneven heating will necessarily produce uneven cooling, which in turn will cause uneven strains in the steel, and result in hardening cracks. Gas heated furnaces for treating such steels are far better suited for the work, since the rate of heating can be easily controlled and the uniformity of the gas-heated ovens is all that could be desired.

Heating steels for ordinary hardening can be accomplished in several ways.

The most general practice is to use oven furnaces for such work. When this type of furnace is used for high-speed steel, the work should be preheated to about 1,100 deg. Fahr., and then placed in an oven having a slightly reducing flame, and a temperature ranging from 1,800 to 2,400 deg. Fahr., according to the character of the tool. There are, however, some classes of work which can be better handled perhaps in a liquid bath consisting of molten lead or salts. Small pieces such as typewriter and adding machine parts, spiral springs, cutlery, and long slender tools, such as drills and reamers may be handled better in such a bath.

This method will not only give uniform heating, but there is less chance for overheating and oxidation.

Lead, however, is expensive and therefore cannot very well be used for large pieces. It offers many disadvantages, such as sticking to the parts immersed, and unless the surface is well covered with charcoal it volatilizes very easily and these fumes are poisonous.

Heating in Salt Solutions

To prevent lead from sticking to the work, cover the tools with a paste made of whiting mixed with alcohol, or dip them in a strong solution of brine.

Heating in salt solutions is very practicable and offers some advantages over lead. Pure table salt may be used, or mixed with chloride of potassium in different proportions and thus almost any predetermined temperature may be obtained. The melting point of the mixture may thus be used as a guide to determine the proper heating temperature.

Barium Chloride Baths

Barium chloride baths are sometimes used for hardening high-speed cutting tools. Their use, however, has been very much limited on account of the fact that very few operators know enough about handling them to have pronounced success.

Barium chloride consists of a salt melting at about 1,625 deg. Fahr., and is usually heated in crucible furnaces. The upkeep cost of such crucibles at the present time makes this method almost prohibitive.

One of the great advantages in this method of heating lies in the fact that tools having cutting edges do not suffer from oxidation as in other methods of heating, because on removing the tools from the bath a thin film of the solution adheres to the metal and prevents contact with the air.

Work which is to be heated in barium chloride should first be preheated to a temperature of at least 1,000 deg. Fahr. before placing in the bath.

Frequently this type of furnace is operated at such a high temperature (over 2,200 deg. Fahr.) that pitting of the steel occurs. This may be avoided by carrying a lower temperature.

Quenching

The second operation of importance in hardening is the method of quenching. This not only applies to the kind of quenching bath but also to the way the part is handled in the bath.

Cold water, oil and air offer the best means of cooling the steel.

Air, however, can only be considered for such work where scaling is of no consequence or where the work can be ground after hardening.

Brine is used where extreme hardness is desired, but unless unusual precautions are taken in having the work heated very uniformly, this method is likely to crack the steel.

Even plain cold water is very severe on the work and like brine may cause trouble on account of crack-

ing. Yet for a great many classes of work this method is preferable.

Steel ball bearings are an example wherein extreme hardness is desired, and where water quenching is therefore preferable. The largest part of the quenching is done in oil baths, particularly for high-carbon steels, and those used in places where the specimen may be subjected to considerable shock. Spring steel, likewise, should be quenched in oil. This method of quenching is not quite so rapid, or as severe as water or brine, yet quick enough to give the proper hardness to almost all work.

Importance of Keeping All Quenching Baths Cool

It is important to keep all quenching baths cool, and to replenish them from time to time with a fresh supply of the liquid.

Where water is used it is best to keep up a fresh supply continuously.

Oil baths are cooled either by a series of cold water pipes around the tank, an agitation of the oil by compressed air, or a circulation of the oil. The last named method is perhaps the best as it not only causes a cooling of the oil but also a constant changing of the bath and takes the heated oil away from the metal after it has given up its heat to the oil.

Quenching should be done rapidly, but uniformly. Tongs for holding the work should have as small grip as possible. Long pieces of steel, including drills and reamers should be quenched with their axes vertical. Where this is impossible, such as in very long, round rods, they should be made to roll into the quenching bath with their long axes horizontal, but they should enter the bath very quickly. Round cutting tools should be immersed with their axes horizontal. Small tools or pieces should be kept in motion when placed in the cooling bath.

For cutting tools, many shops are adopting the so-called "self hardening" steels. These steels contain a higher percentage of manganese than other steels, and also a small amount of tungsten. They harden when quenched in air, and for cutting very hard work they will maintain their hardness even when heated almost to a red heat, which in case of ordinary steels would cause them to soften.

Briquette Production Increases

The production of fuel briquettes in the United States in 1916 was 295,155 net tons, valued at $1,445,662, an increase compared with 1915 of 73,618 tons, or 33 per cent., in quantity, and $409,946, or 40 per cent., in value. The production in 1916 was the greatest recorded, exceeding that of 1914, the previous high record, by 44,520 tons.

This increase in 1916 is attributed by C. E. Lesher, of the United States Geological Survey, Department of the Interior, to the improvement in trade conditions arising from the unusual demand for coal, and to a greater general appreciation of the value of briquettes for use as household fuel. During the last two years the product of many of the plants has been so much improved that it gives off less of the heavy, tarry smoke that domestic consumers have found so objectionable. With these improvements the future prospects of this business are good.

32-Ft. Pipe Burner Used in Cracker Box Drier

The Clinton (Iowa) Gas & Electric Company, of which Thomas Crawford is general manager, has recently made an industrial fuel gas installation that presents novel features.

The purpose of the installation is to dry plated metal cracker boxes.

The device consists of a 32-ft. long burner made of 1¼-in. gas pipe with ⅛-in. holes drilled about 1 ft. apart. This is inclosed in a galvanized iron box and air is injected into it through a ¾-in. pipe.

Through the galvanized iron box also runs a sprocket chain. The boxes run the course of the installation on this and by the time they have completed the journey are dried.

The installation has proved a success and it saves considerable labor. It was placed in the plant of the Iten Biscuit Company at Clinton.

Substituting New Ideas for Old in Safety Work

If one wishes to obtain satisfactory results in reducing industrial accidents, he must change the habits of his workmen, states H. E. Hoagland in *American Industries* for February. This is a difficult task. If one does not believe it, let him try to change his own habits.

But it can be done and it is being done. At least the success thus far attained is sufficient to encourage us to further efforts. Publicity alone is not sufficient to effect this change of habits; but it will help very materially in reaching that end.

First we must use the power of suggestion and substitute new ideas for the old. It is well to begin a safety campaign by calling together the workmen, by departments if the plant is large, and announcing that, with their help, it is expected to reduce accidents in the plant. Be frank with them and tell them that you yourself haven't done as much as you could to prevent injury to them. If you had you would not be seeking a means of reducing accidents. Be sincere in your promises to do your part toward raising the standard of safety in your plant.

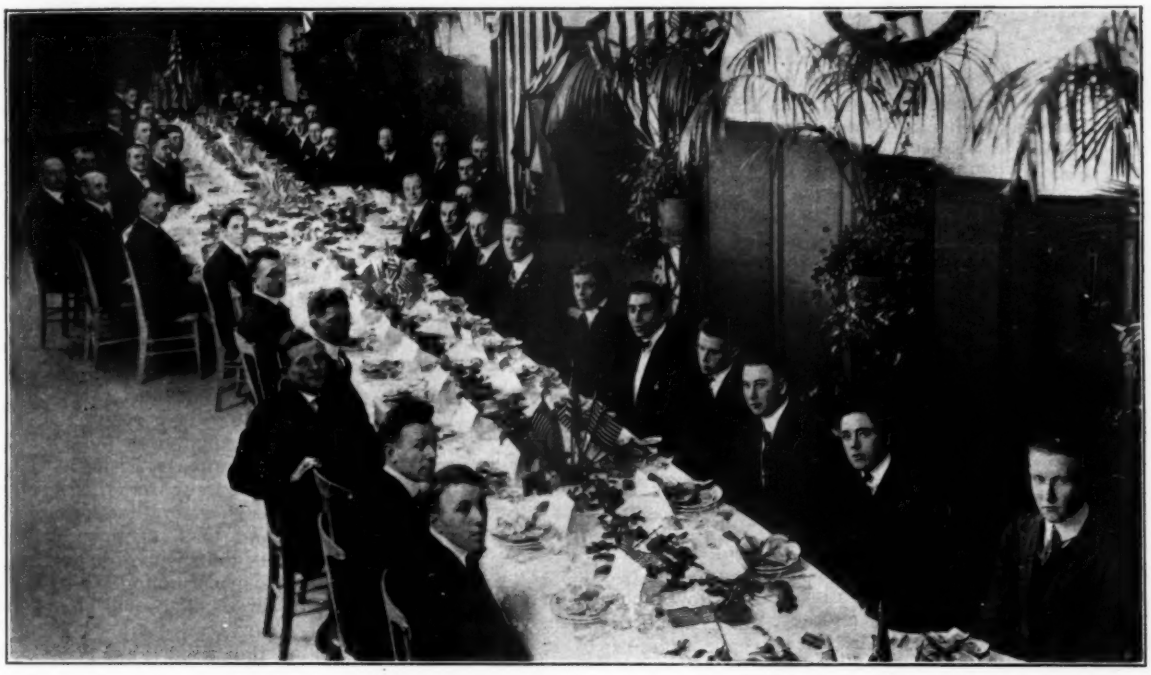
You can't expect your workmen to spend their noon hours reading long, wordy bulletins. And you do not want them to read such bulletins on your own time. Give them bulletins which carry their messages in much the same manner as do the advertisements which you read from time to time, more or less unconsciously.

Any bulletin soon loses its power of appeal if kept posted too long in the same place. For that reason, there should be a change of bulletins each week or each two weeks at the most.

Even the form of the bulletin board and its location merit close attention. It should be located where the maximum number of men will see it and it should be in a well lighted place. Unless the board itself is neatly constructed, it may give the impression that you yourself do not take safety work seriously.

In all safety publicity care should be taken to use language understood by the workmen. It is useless to put a bulletin printed in English before an Italian who does not read English. It is almost as bad to put a technically worded bulletin before most common laborers. And of course it is a waste of time to give printed instructions or suggestions to the man who reads no language.

News of the Gas Industry



BANQUET GIVEN TO BALTIMORE GUARDSMEN

Baltimore Welcomes Guardsmen

Banquet Given by Consolidated Company in Honor of Their Employees Who Responded to Mexican Call

A dinner was given on March 1 by the Consolidated Gas, Electric Light & Power Company of Baltimore, Md., at which the guests of honor were those employees who responded to the call of the President of the United States last June to protect the rights of their country on the Mexican border. The Consolidated company was represented in each of the Maryland units, and the dinner was given upon the return of the last of the Maryland regiments.

When the troops were called out the president of the company, Herbert A. Wagner, notified those employees who were then members of the Maryland Guard that during the time they were in the service of the country their salaries would be paid in full and that their positions would be held open for them. The dinner was attended by the Adjutant General of the State and officers of the Maryland National Guard. The Consolidated company was represented by Charles M. Cohn, vice-president; John L. Bailey, treasurer; E. D. Edmonston, general superintendent and George Beadenkopf, chief engineer.

In welcoming the men, Mr. Cohn said: "Gentlemen of the National Guard of the United States and the State of Maryland and others. This is a most happy occasion. It affords me great pleasure on behalf of the management of the Consolidated to welcome you home. We are glad that you responded promptly to the colors and we are equally glad to see you back home.

"This little occasion is but an outward manifestation of our appreciation of your patriotic response to the call of the President to the border of Mexico. The fact that you were in the militia of the state and in training for such a call or any other call to duty is an evidence of your good citizenship. It is such training that enables you to respond as you have to active duty, duty which may involve upon you the responsibilities and dangers of service in the field. I am sure that there is not a man here but who would not have gone eagerly to the firing line had he been called. It is in great crises such as we are now experiencing that we forget the petty things of life and rise to the nobler and sterner duties of citizenship, and the men who have gone through a course of preparation such as you have and who have the ability to properly perform their duties are the men upon whom the country can rely.

"After all has been said and done, we know that the Government is but the means, is but the instrument for carrying out the will of the people as a whole. And we also know that the essential characteristic of government is authority. There must be someone, there must be some collection of individuals, who have been invested with authority to carry out the will of the people. Now it is idle to talk about carrying out authority without some means of enforcing that authority. It is organized force upon which, in the last analysis, the Government must rely to carry out and enforce its authority. The militia has been found to be the strong arm of the Government; it stands ready in local affairs and, under the recent Federal Act in national af-

fairs, to support the State and the Federal government. There has been no time when the militia has been as much appreciated as at present. And you gentlemen are to be congratulated that when the call to duty came you promptly and cheerfully responded.

"On behalf of the Consolidated I might say that what we have done is as nothing compared with what you have done and what you were willing to do. When you were on the border just think of the hundreds of us at home who were following our usual avocations, feeling a sense of security that you were standing there with other men as a protection to the rights of our country. And it is as little as we can do to give you a hearty greeting when you return, and to see, as far as we can, that you have not lost anything pecuniarily by reason of your absence and that your positions are open to you now that you have returned.

"But the Consolidated is not alone in respect to holding open the positions of the men. I happen to be the chairman of the committee which has been named to obtain positions for men who responded to the call and who, through one reason or another, have failed to secure their places upon their return. I am gratified to say that there have been only about five or six men who have so far seen me because they were unable to secure their former positions and in almost every case it has been for some cause beyond the control of the employer. That shows how the employers of Baltimore feel toward the militia. They recognize their obligation to the men in the militia, they recognize that you have measured up to your obligations and it is but a small thing for them to do their part.

"Now, gentlemen, I am not going to burden you with anything in the nature of a speech. This occasion is not for the spread eagle speech making of those who like that sort of thing, and I do not believe there are any here who especially enjoy it. This is your occasion. This occasion has been arranged entirely for your pleasure and whatever will add to your enjoyment is what we want to extend to you.

"I do want to read to you one or two letters which have been received by us from the State officials and members of the Naticnal Guard explaining their absence. Governor Harrington writes that he greatly regrets that he had already accepted another invitation to a banquet for this evening and consequently would not be able to be here. 'If I could go to both I should feel much delight, but I fear that this may not be possible.' That is signed by Emerson C. Harrington, governor of Maryland.

"His Honor, Mayor Preston, states: 'I regret very much that I have two engagements for this evening which will prevent my being present with you. It is with real regret that I find that I am not able to accept.'

"General Gaither writes that he exceedingly regrets that he will be out of town to-night. Writing of the action of this company he says, 'The splendid action of your company in continuing the salaries of all members of the National Guard who were called into active service, should be an object lesson of patriotic spirit to all employers and I regret that I can not show by my presence the very deep appreciation that I feel as the commanding officer of the National Guard of the State for your most generous support at a time when that support was most needed. Wishing you a delightful evening, I am, yours very sincerely, Charles D. Gaither.' Col. Hinkley of the Fifth Regiment wrote, 'May I take this occasion to say how much I appreciate the splendid support which your company gave to those of its members who gave their services to their country when called upon. I have often said that I doubted whether any National Guard regiment on the border had better support from the financial and mercantile community at home than the Fifth Maryland Infantry.'

"We regret, of course, gentlemen, that these men are not with us to-night. I might add too—this is a matter of personal interest to you—that Mr. Wagner, our president, happens to be in Florida at this time and of course was unable to be present. I am sure that when he returns and finds that we have had this dinner that he will be very very regretful, because he had taken the keenest interest in your welfare and there has not been a time since the call was first made that he has not followed your course. Mr. Aldred happens to have engagements in New York which prevented his being here. I am sure that I express his sentiments when I extend to you in his behalf a very genuine welcome back home."

Independence Plant Giving Good Service

The Independence Gas Company at Independence, Iowa, has their plant again in first class order after the recent fire, the reports of which were much exaggerated in the daily papers. The building is of brick and the fire destroyed only the roof, but a broken fitting caused a hot blast of the high pressure gas which burned out the governors and melted various valves.

The repairs were made in rapid time, so that the plant was only out of service for a few days.

Gas at Famous Coast Resort

Among the present and prospective users of gas in the famous summer colony at Gloucester, Mass., are George E. Tener of Pennsylvania, who is placing in his fine residence an all-gas kitchen, with large cabinet gas range and automatic water heater; Mr. Loose, of the Loose-Wiles Biscuit Company, who is having installed a Pittsburgh multi-coil hot water system in his new $50,000 summer cottage; and the Siamese Embassy, which is equipped with modern gas appliances.

The Gorton-Pew Fisheries Company, the largest curers of fish in the world, has successfully experimented with a Kane gas steam boiler, with the result that when the company builds its new canning plant, a battery of these boilers will be installed for cooking.

Other industrial users in Gloucester are Dr. Babson's dairy, where the bottles are sterilized by an electric weld gasteam boiler; the Perkins Box Company, which uses about $100 worth of gas per month for a 50-h. p. gas engine and other uses; and the Hotel Savoy, which has a No. 8 automatic heater capable of heating 8 gallons of water per minute, and a large gas broiler for its famous "broiled live" lobsters.

The Moosland Hotel at Bass Rocks, near Gloucester, is a large user of gas, and various cottages at Wheeler's Point will soon be supplied.

It is evident that the summer resort business is a kind of business which is well worth going after, and managers of plants serving territory of this character would do well to lay their plans early for this campaigning.

Pacific Consumers Increasing

In the month of January the Pacific Gas & Electric Company made a net gain of 1,355 customers, and at the close of that month was serving 423,149 consumers. The size of this list may be appreciated from the fact that it exceeds the population at the 1910 census of each of ten states.

INTERIOR VIEW OF MAIN DISPLAY ROOM

New Branch Office Building of N. Y. Consolidated Soon to be Opened

Workmen are fast getting into shape the new building of the Consolidated Gas Company of New York, at 212 to 218 West Fifty-seventh street, which is to be ready for occupancy on April 1 as a branch office, thereby doing away with the branch office which for fifteen years has been located in West Forty-second street.

The new structure will be three stories in height. It occupies a site 120 x 100 ft. The front of the building is of buff limestone and of the true Italian Renaissance design. The main entrance is in the center of the building on Fifty-seventh street, and is twenty feet wide. On each side of the main entrance there are two show windows, these four windows also being twenty feet in width. There are two smaller or secondary entrances to the building leading to the upper floors.

The main sales and display room is on the first or ground floor. This room is eighteen feet high and extends almost the entire width of the building, being 116 ft. long. It will contain a black and white marble counter running the full length of the room. The ceiling of this room is of plaster, but highly ornamental in design, and to harmonize with the counter screen it will be of the Italian Renaissance period. Warren & Wetmore, the architects, have relied on the painted finish for their chief effects in completing the display room, which will be decorated in black ivory, relieved with light decoration of a golden tone. The expansive floor of this room will be laid in black and orange terrazzo with black marble borders.

The display and counting rooms will be abundantly lighted by the natural daylight, as the architectural arrangement of the ceiling permits of the use of high windows, thus giving the counting room an exceptional flood of daylight by means of a center window forming an arch twenty-one feet wide and fifteen feet high. This window is glazed with amber glass, which will give at all times a true sunlight effect. There will also be a series of windows along the rear of the building flanking the large center window.

The building will be lighted throughout by gas. The chandeliers in the display room as well as the side brackets are of bronze and specially designed to harmonize with the beauty of the architecture and the interior colorings. Each one of the six chandeliers will have lights of sixteen hundred candle power. It is a conceded fact that the Consolidated Gas Company's building at Irving Place and Fifteenth street is the most beautiful illuminated building in New York City. The branch office building in West Fifty-seventh street will be a close second. At night the front of the building will be bathed with light from twelve lamps of 2,000 candle power each, secreted under the bronze cornice along the top and front of the building. In addition there will be six lighting fixtures on the front of the building, one on each side of the display windows and the main entrance, and these will each be of 1,600 candle power. This branch office will represent the customers of the Consolidated Gas Company who live or are engaged in business in the territory bounded by the north side of West Twenty-third street and the south side of West 110th street. Its completion marks one more progressive step by the company.

Court Forces 12 Jobs in Queens County, N. Y.

Justice Callaghan in the Queens County Supreme Court upheld the commissioner of water supply, gas and electricity in appointing two inspectors for each of the six gas companies in Queens. The law permitting the appointments was unearthed two years ago, and Deputy Commissioner Dwyer promptly named two inspectors for each company, the salaries, $100 a month, to be paid by the companies.

The Woodhaven Gas Company refused to pay, and Dwyer refused permits to open streets to lay pipes. President Connolly, politically opposed to Dwyer, issued the opening permits and the city applied for an injunction restraining the company from opening streets except with permission of the deputy water commissioner.

The other five gas companies, all subsidiary to the Brooklyn Gas Light Company, have been paying the inspectors under protest, awaiting the court's decision. The ruling of Justice Callaghan insures the twelve jobs in Queens.

Natural Gas Company Changes Hands

Former Judge S. S. Hehard of Pittsburgh, Pa., with E. B. Reeser and W. H. Richards, representing a natural gas syndicate, have closed a deal in Coudersport, Pa., for the Mountain Gas Company, one of the largest natural gas producers in this section. The price was $300,000 and the holdings of several small companies are acquired. The purchase was made for the Potter Gas Company, which will control the output in this section.

Providence Yearly Report, Best in History

The report of the board of directors of the Providence (R. I.) Gas Company, submitted at the annual meeting, shows that during 1916 the company's sale of gas increased 8.1 per cent., the largest increase in any one year in the company's history.

The stockholders met in the company's office, Turks Head Building, Providence, and re-elected the following directors: Henry D. Sharpe, John R. Freeman, Webster Knight, Frank W. Matteson, William L. Hodgman, John B. Branch, Charles H. Manchester, Frank C. Nichols and John O. Ames.

Following the election the direct-

ors met and re-elected Charles H. Manchester as vice-president and treasurer, and Arthur F. Short as secretary and assistant treasurer. No president was elected at this meeting. In connection with the office of president, the report of the directors says:

FREEMAN TO BE PRESIDENT

"The board is in a position to announce it has in contemplation an arrangement with John R. Freeman who, after years of service as a member of the board, is expected to assume the duties of president on his return from abroad, about April 1 next."

The report shows that the company manufactured 1,910,981,000 cu. ft. of gas. Of that total, 2.5 per cent. was not sold, due to leakage and other reasons. The company used 97,101 net tons of gas coal, 14,837 tons of Lehigh, 6,498 tons of steam coal, 2,107 tons of coke at South station, and 3,325,183 gallons of gas oil.

During the year the company sold 29,319 tons of coke, 1,233,726 gallons of coal tar and 540,441 pounds of ammonia. New connections laid during the year amounted to 1,261, and old connections, relaid, totalled 303. The number of meters in use Jan. 1, 1917, was 60,942. During the year 29,960 meters were set, and 26,770 removed, a net gain of 3,190 in the year.

The 70th annual report of the board of directors shows that the gain in the sale of gas during 1916 was the largest in the history of the company, amounting to 8.1 per cent. The treasurer's report shows gross operating earnings of $1,629,271.71, an increase of 9 per cent. over 1915, and gross operating costs of $958,666.57, an increase of 9.3 per cent. Interest on debentures and floating debt amounted to $65,736.26, and $132,000 was set apart for depreciation. The usual dividend of 8 per cent. has been paid and there is a net profit, over dividend requirements, of $80,868.88.

Three Appliance Companies Merged

Through a deal just consummated the Baltimore Gas Appliance & Manufacturing Company, one of Baltimore's new industries, has acquired two New York concerns—the General Gas Appliance Company and the Schmitt Manufacturing Company. Both concerns will be moved to Baltimore, and as the result of the merged operations the gas appliance company will increase its business to a yearly output of $1,000,000.

A special meeting of stockholders of the Baltimore Gas Appliance & Manufacturing Company was called for March 13 to consider the proposal, which has been approved by the board of directors of the company to acquire the assets, good will, franchises and property of the New York companies.

$1,000,000 BUSINESS ANNUALLY

The General Gas Appliance Company and the Schmitt Manufacturing Company have been doing a yearly business of some $400,000. The business of the Baltimore Gas Appliance & Manufacturing Company last year approximated $500,000. The plants of the New York companies could not meet the sales demand and an investigation was made of the feasibility of having their output produced by the Baltimore company. This led to negotiations which will result in the merger.

While the Baltimore Gas Appliance & Manufacturing Company will increase its capitalization, there will be no public offering of securities, as the new issues of stock will be exchanged for securities of the companies which will be absorbed.

The Baltimore Gas Appliance & Manufacturing Company was organized largely through the support given the project by J. E. Aldred. The company leased from the Consolidated Gas, Electric Light & Power Company a tract of land improved with nine buildings in Southwest Baltimore. It has since purchased the property and erected buildings to increase its capacity.

Last year the Baltimore company manufactured and sold 43,726 gas appliances. Its customers included 638 companies, most of them gas companies scattered throughout the United States. The company already has on its books for 1917 orders for more ranges and water heaters than it shipped during all of 1916.

During February the Baltimore company declared an ititial dividend of 1 per cent. on its common stock. From the start the preferred stock has paid dividends, having been increased from 6 per cent. to 7 per cent. during 1916.

Its plans now call for doubling its present capacity and securing additional land. The president of the company, H. W. Hunter, has from the organization of the company, five years ago, said that Baltimore is an ideal manufacturing city. His plans were laid to make his company the largest of its kind in the world.

The other officers of the company are: Vice-president and treasurer, D. C. Ammidon; secretary, Norman James. These, with R. Curzon Hoffman, Jr., and Edmund S. Dickey, constitute the board of directors.

West Virginia & Maryland Asks Increase

The West Virginia & Maryland Gas Company has applied to the public service commission of Maryland for permission to raise its rates, effective April 1, 1917.

Announcement has been made to consumers of the new schedule. It is noted that for Class A, Domestic consumers, the rate will be thirty-six cents per thousand cubic feet, if paid for within ten days from date of bill.

Class B, Preferred—The rate will be twenty-six cents per thousand cubic feet, with a discount of two cents per thousand cubic feet if paid for within ten days from date of bill.

Class C, Non Preferred—The rate will be for the first 200,000 cu. ft. thirty-eight cents per thousand with a discount of two cents per thousand cubic feet when paid for within ten days from date of bill. Over 200,000 cu. ft, will be seventeen cents per thousand cubic feet with a discount of two cents per thousand cubic feet when paid for within ten days from date of bill.

Oil Lands Transfer

The Prairie Oil & Gas Company, Blackwell, Okla., has purchased the holdings of the Minnetonka Oil Company in the Cleveland field with 600 barrels daily production from 80 wells. There are 1,200 acres that go with the property, which is considered one of the best in the state.

For many years John Shell has been in active charge of the Minnetonka and was one of the most popular producers in that district. He is now living in California, near Beverly Hill.

The deal was made by the Lochners of Pittsburgh, who are the controlling factors in the Minnetonka and who own other property at Blackwell, being associated with Neely in the firm of Neely & Lochner in the Boynton field.

The purchase price was not made public.

Chicago Rate Agreement Reached by City and Company

Ordinance as Outlined by Experts Seems to Meet with Approval

After more than a year of investigation and negotiation the Peoples Gas Light & Coke Company and the City of Chicago have effected a gas rate agreement.

The city council gas, oil and electric light committee approved a report submitted by its experts outlining provisions of a proposed permissive ordinance. William G. Woolfolk, engineer representing the gas company, announced that an ordinance as proposed in the report will be accepted by the gas company.

The committee, by a vote of 12 to 3, directed D. R. Richberg, its special counsel, to prepare an ordinance containing the provisions outlined in the report.

This means that if the ordinance, as outlined, is finally passed by the council gas consumers will receive a gas rate slightly in excess of 70 cents per 1,000 cubic feet.

Here are the chief provisions of the proposed ordinance:

Thirty cents for the first 350 cu. ft. and 70 cents for all gas sold from 350 cu. ft. to 10,000 cu. ft.

565 B.t.u. candle power requirement of not less than nine nor more than eleven for eighteen months. For the first sixty days following the acceptance of the ordinance, sixteen candle power shall be furnished.

All net earnings in excess of $4,000,000 per year, but less than $4,500,000, to be divided between the company and gas consumers in the ratio of 75 per cent to the company and 25 per cent to the consumer. All net earnings in excess of $4,500,000 to be divided "fifty-fifty" between company and consumers.

Junior mantles shall be supplied consumers for five years at the following rates:

First Year

Brass fixture, 5 cents.

Mantle and mica chimney, 10 cents.

First installation, 5 cents.

Second Year

Brass fixture, 3 cents less than cost.

Mantle and mica chimney, 10 cents less than cost.

Installation, at cost not to exceed 7 cents.

The company concedes to the city its right of future regulation of rates, standards and service and agrees to abide by such regulations, providing the city does not change the rates and standards as outlined during the twelve months following the acceptance of the ordinance.

The present penalty for prompt nonpayment of bills of 10 cents per 1,000 cubic feet remains in effect.

The report outlining the proposed ordinance was agreed to by the city's experts and representatives of the gas company, who have been meeting every day for more than two weeks in an effort to get together on a plan which would be acceptable to both the city and the company. It was approved by the committee after a two-hour discussion.

The ordinance may be amended when considered by the committee, but last reports indicated that the ordinance as outlined by the experts will be acceptable to the majority of the committee.

Illuminating Men Meet in New York

A very successful gas lighting meeting was held by the Illuminating Engineering Society at the Auditorium of the Consolidated Gas Company, 130 East 15th Street, New York, Thursday evening, March 8.

After the usual informal dinner held just previous to the meeting at Allaire's Restaurant, 143 East 17th Street, the members and visitors went to the gas and electric building where they accepted the hospitality of the Consolidated's Auditorium. When the meeting was opened by the chairman, W. Greely Hoyt, president Municipal Light Company, N. Y., almost every seat was filled. Paul L. Zoellner of the Nichols Gas Fixture Company, gave the "Development of Lighting Fixtures," from the medieval candlebrum to the most modern type of gas and electric fixture. The unique feature being that each style was sketched in charcoal on a large chart.

After a few short discussions H. H. Newman of the Public Service Corporation of New Jersey, read a paper on "The Maintenance of Residence Lighting," in which he described the practice and experiences of the New Jersey maintenance service. This paper is given in full elsewhere in this issue. A number of other discussions followed among which Dr. Lyons of the Welsbach Company of Gloucester drove home in the minds of those present that the future progressive policy of the gas company must be one of affirmation as to what has been done and not of apology of what has not been done.

L. H. Werner, vice-president and treasurer of the Central Union Gas Company discussed residence maintenance and gave some interesting figures as to cost per lamp according to his companies experience.

Greeley Hoyt's remarks at this point on the lighting question struck such a key note as to earn emphasis in the following:

"It is a noteworthy fact, as recognizing the importance of the subject, that practically all gas associations and gas periodicals of the country for some time past have been engaged in discussing the subject of maintenance of incandescent gas lights.

"I believe that it is an accepted view that maintenance in one form or another will have to be furnished to gas lights if our illuminating business is to live and grow. No gas company will deny this if it has any regard for its welfare or any sense of perspective.

"Consumers of gas will not look after their lights—even the ordinary ones—and if the light is obtained through, and by the use of, a gas mantle the problem is deeper and even more involved, principally due to lack of knowledge on the part of the public of this form of lighting.

"The gas company's precept is 'good service'—an actual obligation, not an implied one—and there can be no backward step in this regard.

"As a concomitant, however, to any general system of maintenance and the extra expense of same, consideration must be given to existing gas rates and to the possibility of inclusion therein of such added extra expense not now contemplated or included in said rates, and this is especially so if thermal standards are adopted."

After the meeting a concert was given by the Consolidated Orchestra.

Staten Island, N.Y., Utilities Consolidation

The Public Service Commission has ordered a public hearing March 5 on application of Richmond Light & Railroad Company and the Staten Island Midland Railway Company to consolidate. The results of the meeting are as yet unknown. But it is proposed that the new company to be known as the Staten Island Light & Traction Company, Inc., shall be formed to take over all assets and liabilities of the two trolley companies of Staten Island.

Personal Notes

G. H. HUBBARD, who for the last eight months, has been manager of the Citizens Gas Company in Hannibal, Mo., has been transferred to Grand Haven, Mich. He will be succeeded in Hannibal by T. E. McKenzie.

CHARLES BOLDT, bottle manufacturer, has been elected a director of the Union Gas & Electric Company, at the recent annual meeting of the stockholders. Mr. Boldt succeeds to the vacancy on the board caused by the death of F. B. Enslow of Huntington, W. Va. Other directors were re-elected as follows: Samuel Assur, W. Y. Cartwright, George W. Crawford, W. W. Freeman, P. G. Gosler, Louis J. Hauck, August Herrmann, J. M. Hutton, A. B. Leach, C. P. Taft, Robert A. Taft, T. F. Wickham and Polk Laffoon.

JOHN A. BRITTON, JR., assistant gas engineer for the Pacific Gas & Electric Company, spoke at a recent employees' association meeting held at Hotel Oakland on the subject of "service." He told of the various steps in the development of gas at Oakland and compared the day the company was organized 50 years ago with but 12 customers and a daily output of 3,000 cu. ft. with the 1916 record of 70,000 consumers and largest daily output of 9,300,000 cu. ft. He also spoke of the fact that gas was originally sold in Oakland for $7.50 a thousand cubic feet and to-day is sold at 90 cents a thousand for general household use.

GEORGE H. PIERCE, employed by the Providence Gas Company for the past 36 years, much of that time in the position of inspector, died at his home 1055 Eddy Street, Providence, R. I., Friday, March 2.

LOUIS B. SHARP, formerly superintendent of the Queens County Gas & Electric Company, New York, died at his home March 6. He was identified prominently with civic affairs in Queens County, and was a past master of the Olympia Lodge, F. and A. M.

BURTON SMART, treasurer of the Portland (Me.) Gas Light Company, recently gave an interesting talk to the Rotary Club at the Falmouth Hotel, Portland. He spoke of the growth of the Portland Gas Company and showed his appreciation of being asked to speak on an industry "which has expanded in the last few years to such proportions that up to 1910 (United States statistics) it was exceeded only by two—the iron and steel and the lumber and timber products."

THE NEW YORK SECTION of the Gas Meters will hold a ladies' night at the Elk's Club, Brooklyn, N. Y., March 29. A dinner will be served at 8 P. M., followed by dancing. Tickets, $3, per person, may be secured from D. C. Ebbets, chairman of the ticket committee, 180 Remsen Street, Brooklyn.

WALTER COAKLEY, formerly plant superintendent of the Toledo Railways & Light Company, operated by Henry L. Doherty & Company, recently on temporary detail at the Niagara Light, Heat & Power Company, Tonawanda, N. Y., has been appointed general superintendent of the Knoxville Gas Company.

AVERY SCHILLER, for several years superintendent of the gas department of the Connecticut Power Company, New London, Conn., has been appointed assistant manager of the Adirondack Electric Company, Glens Falls, N. Y., and has taken up his new duties.

Construction Notes

Columbus Concern Installs Producer Plant

The Jeffrey Manufacturing Company of Columbus, O., has made arrangements to install a gas producer plant, because of the shortage of gas for industrial purposes. A number of other plants affected, especially on the South Side, are holding up temporarily, as it is generally rumored that a by-product coke oven plant is contemplated for that section of the city, which will have for sale about 10,000,000 cu. ft. of artificial gas per day.

Spring Extensions Begun at Tampa, Fla.

The Tampa Gas Company of Tampa, Fla., has started its spring work with the renewing and enlarging of several mains in Hyde Park, where there is a large consumption of gas. The main on Magnolia Avenue from Bay to Platt Street has been relaid, a six-inch main having been put in, in order to take care of the service demands in better shape. A four-inch main has been laid on Azeele Street.

On Howard Avenue, from Morrison Avenue to the Bayshore, an eight-inch main has been placed. This completes a circle through the Hyde Park section and insures a good supply for the houses within that radius. The present demand on Howard Avenue is by no means for such a main, but it is put in in order to give service to other parts of the Hyde Park section.

About five miles of new mains will be laid this year the gas company anticipating demands in many sections and showing its faith in the growth of Tampa by putting in larger mains than are now needed in order to take care of the future. Mains have been laid in West Tampa, in Ybor City, on Tampa Heights and in other sections. A considerable investment has been made in order to care for the future.

Texas Plant to be Doubled

No recent announcement has so certainly reflected the growth of Port Arthur, Tex., as that made by President Connelly of the Port Arthur Gas Company recently. The capacity of the local plant being doubled, gas-making machinery is now being built for the local company that, when installed, will give a total daily capacity of 450,000 cu. ft. of gas. Storage capacity of the plant is also being doubled and additional boilers, compressors and pumps will be installed in proportion to the other developments.

Recently, many new mains have been laid as the residence section of the city is constantly expanding. Mr. Connelly says that the improvements now in prospect have been contemplated since last summer, but that delivery of the machinery has been delayed on account of the crowded condition of factories. He now expects that delivery will be begun during this month. It is significant of his faith in the growth of Port Arthur that Mr. Connelly states that the newly equipped plant will provide sufficient gas for a city of 30,000 inhabitants.

Old Gas Building to be Roller Shop

The Taunton-New Bedford Copper Company is preparing to use the former New Bedford Gas & Edison Light Company office building on Middle Street, New Bedford, Mass., as a roller shop. The company's building at the foot of Logan Street was burned down about two months ago and until the new plant is complete the former gas company office building will be used. The work of installing machinery has already been started.